Smithsonian

March 1996

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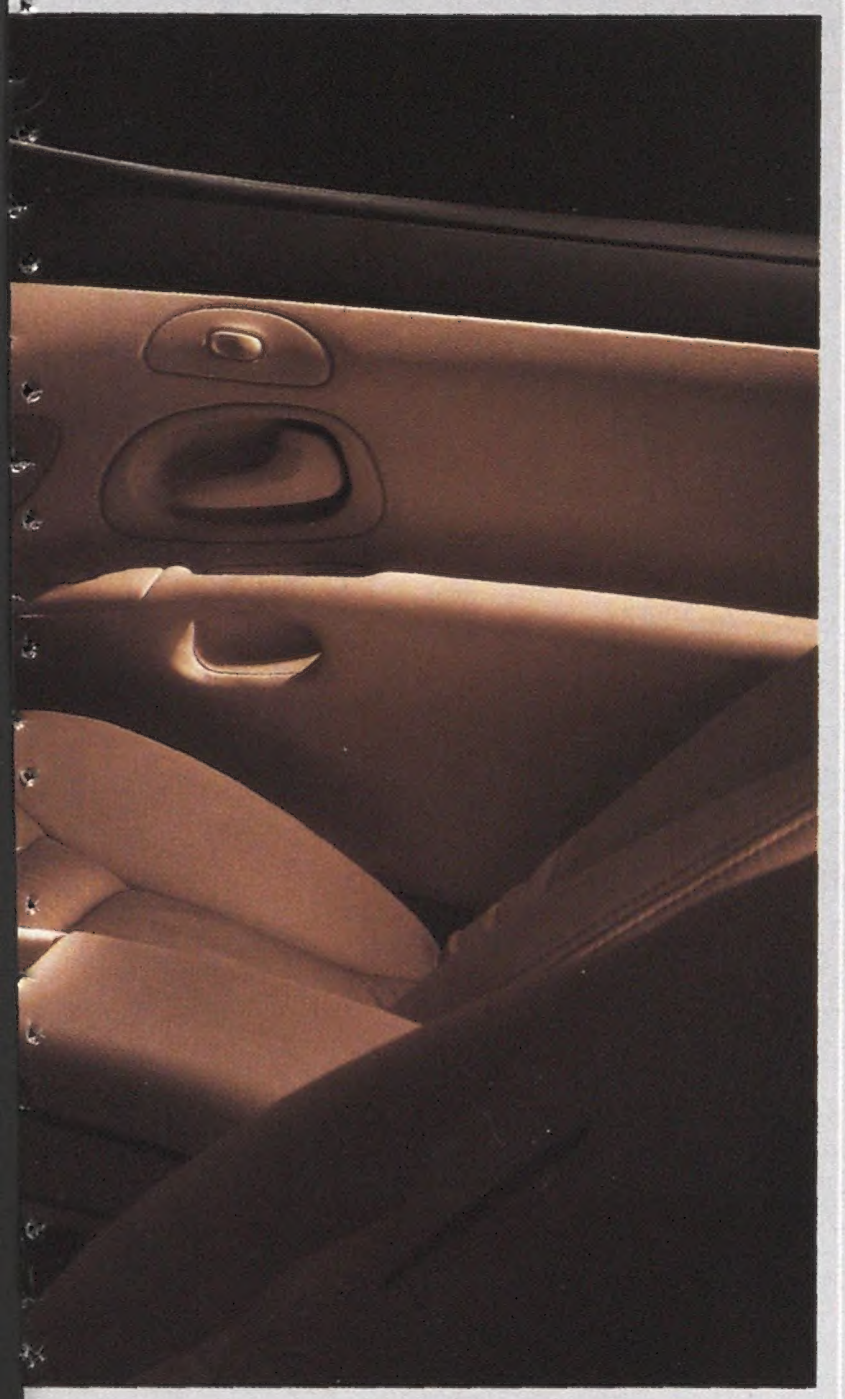

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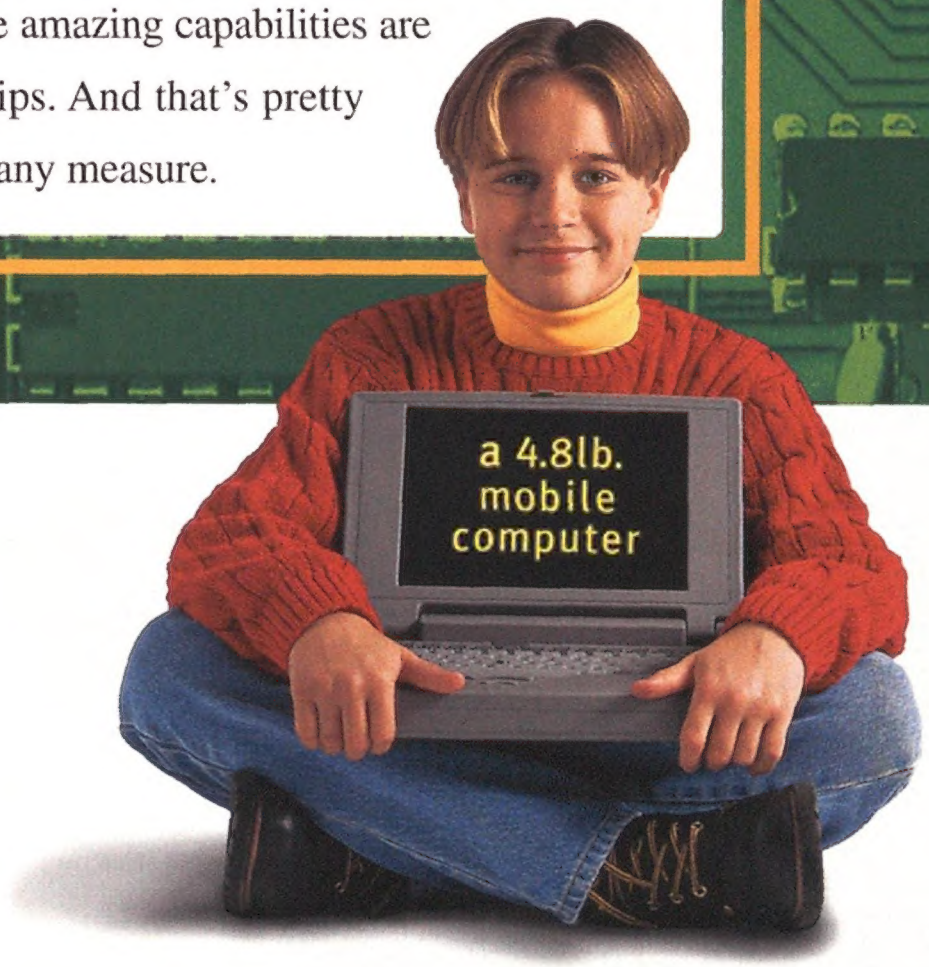

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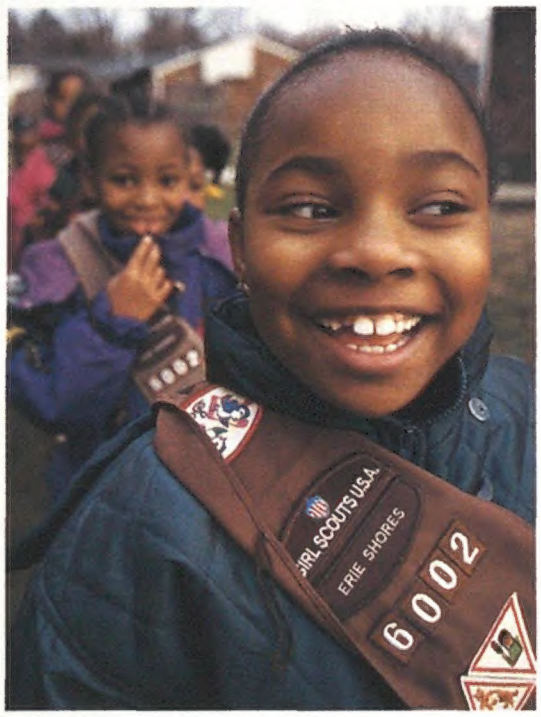
Volume 26, Number 12



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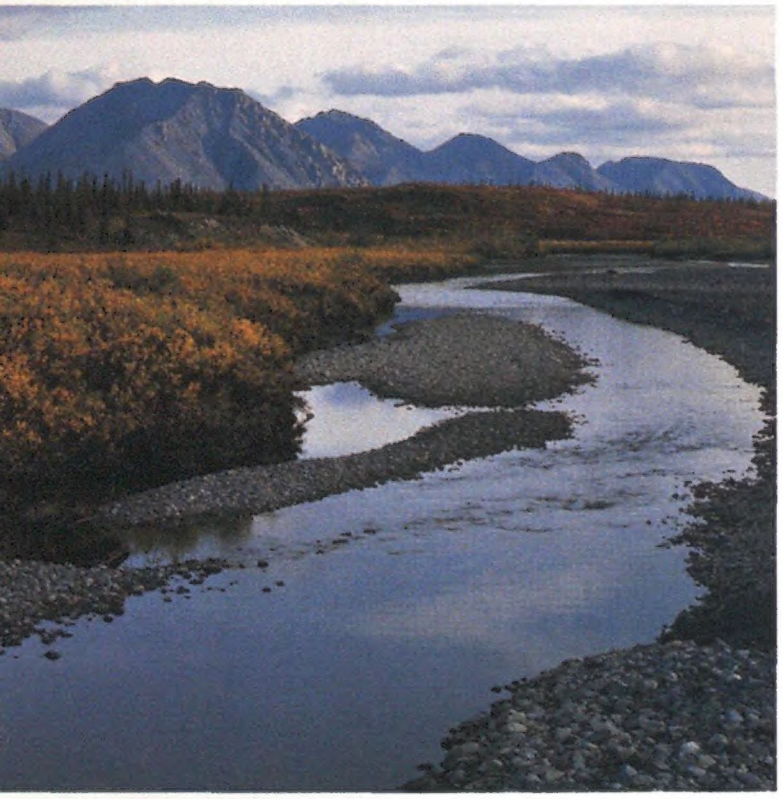

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Smithsonian *departments*

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Volume 26, Number 12

Cover

Cover:
In a river in southern Africa, a hippopotamus assumes the "amphibious position"—ears, eyes and nostrils above water, mouth and throat below. In this position, says biologist William Barklow, it can simultaneously receive and emit sounds, below water and above (p. 90)
Photograph by Kevin Schafer/Natural Selection

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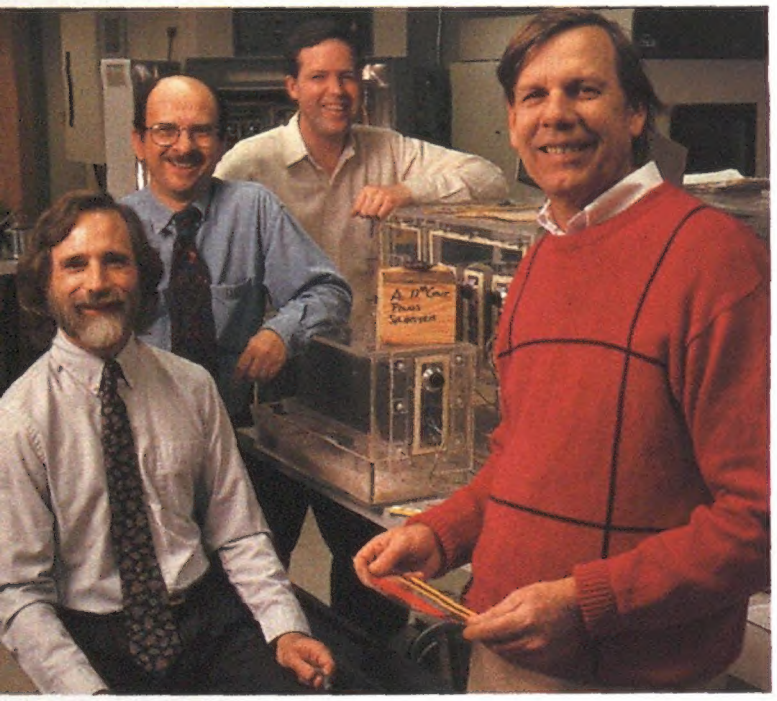

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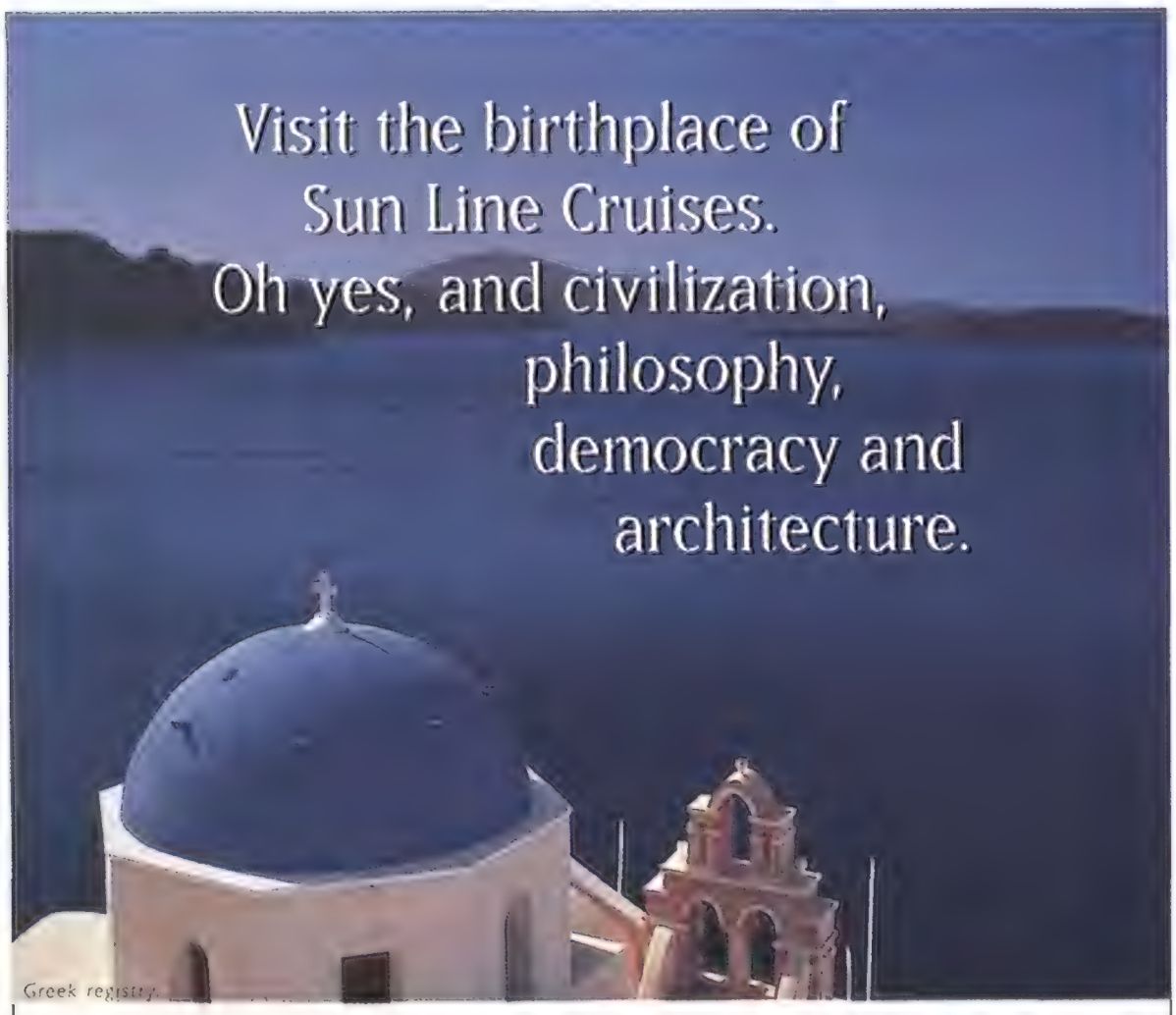

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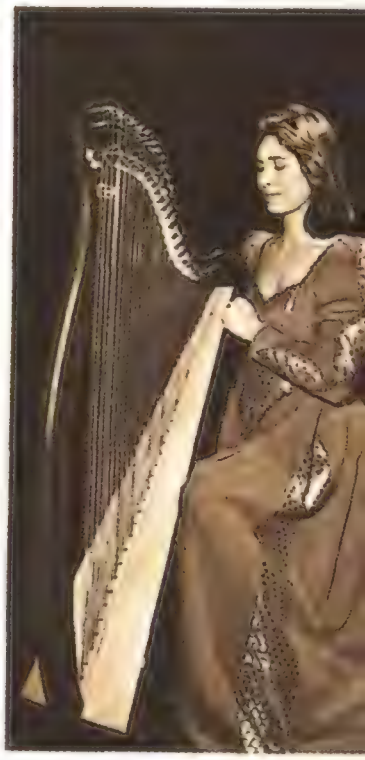

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Secretary Heyman's comments

Smithsonian Perspectives

From the start, the Smithsonian has pursued activities that fulfill its mandate to increase knowledge

Joseph Henry, the first Secretary of the Smithsonian, would be surprised if he were to revisit the Mall today and see the complex of museums representing the institution he had so much to do with establishing. He reluctantly accepted responsibility for the collections assembled under government auspices in various official exploring expeditions, such as that of Comdr. Charles Wilkes to the South Seas. But he feared that "filling a costly building with an indiscriminate collection of objects of curiosity, and giving these in charge to a set of inactive curators," would dull the research edge of an institution founded for the primary purpose of advancing knowledge and, secondarily, of disseminating that newly acquired knowledge.

Henry had successfully resisted efforts to transform the Smithsonian into the national library, turning over the bulk of the Institution's collections to the then small Library of Congress. In the process he had to fire the distinguished librarian Charles Coffin Jewett and then weather a tough Congressional investigation before he made the decision stick. Henry believed that a great nation should have a great national library, but he believed that it should not be at the expense of an institution, unique in its day, dedicated to the advancement of knowledge.

Joseph Henry had no animus against the collection of objects, so long as it contributed toward meeting that goal. The first publication of the Smithsonian Institution was a study of the archaeological remains of an early Indian civilization in the Ohio Valley, which Henry personally purged of its speculative aspects, insisting that its authors limit themselves to verifiable, incontrovertible facts. To that end the Smithsonian sponsored expeditions to Alaska (then in Russian hands) and to the Western territories of the United States in the tradition of Thomas Jefferson's sponsorship of the Lewis and Clark expedition earlier in the century. The investigators were to collect data on native inhabitants, geography, geology, flora and fauna, and the like, so that a better understanding of these regions could be achieved. This often meant collecting objects to be analyzed later at the Institution and disseminating the data in Smithsonian publications. Yet Henry continued to worry that the accumulation of materials collected by Smithsonian researchers would require increased space, time and money to preserve. So he urged a process of distributing objects, once they had served their primary purpose, to smaller museums and historical societies for educational and documentational purposes.

Fortunately, in my view, Henry was not able to limit the growth of Smithsonian museums as he had the earlier library. Having accepted an appropriation from the federal government to take charge of the museum of the United States in 1857, he was in less of a position to halt the process when collections began to pour in during the latter half of the century. He was in an even weaker position when the Smithsonian received objects donated by foreign and domestic exhibitors following the centennial celebration of 1876, in Philadelphia. The objects, he noted, amounted "in bulk [to] four times the space of the present Smithsonian edifice" and created "a crisis in the history of the Smithsonian." Henry never was able to resolve the dilemma. He died in 1878 and was succeeded as Secretary by his "assistant in the department of natural history," Spencer Fullerton Baird.

Baird, the quintessential museum man, was a distinguished scholar in natural history, and his publications list of what were mostly taxonomic studies fills an entire volume. He had been in charge of the U.S. Government's participation in the centennial celebration and welcomed the accession of objects to the Smithsonian's collections after the exhibition's close. He then persuaded Congress to fund a second Smithsonian building, the old National Museum (now the Arts and Industries Building), to house them. Joseph Henry's death and Spencer Baird's succession to the secretaryship marked the end of all restraints on the development of the collections and the accompanying museums to house them.

Since that time, dynamic tension between the research, collecting and educational activities of the Smithsonian has been a continuing theme within the Institution, as successive Secretaries have promoted now one, and now the other. These activities, rightly balanced, can legitimately express the ideal of the founder of the Institution, but improperly pursued, they can result in conflict and carry the Institution away from its mandate to increase knowledge.

My own feeling, coming from a great research and teaching institution—the University of California—that did not exist when the Smithsonian was founded, is that the advancement of knowledge is a sacred trust to which we continue to be obligated. The fulfillment of this responsibility through properly directed collecting, research and educational activities seems to me to be in keeping with Joseph Henry's vision for the Smithsonian, as well as James Smithson's. It is a responsibility that I take seriously and hope to carry out in my own administration of the Institution in the coming years.

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Letters to the Editor

Dowsing

Dear Sir: I enjoyed Jack Hope's article on dowsing in the January 1996 issue of SMITHSONIAN. Some years back I was taking the necessary steps to develop a resort-type lakefront property and needed to dig a suitable well. My father dabbled in dowsing and took it upon himself to pinpoint the spot where I should dig. "There's a nice vein of water right around here," he proclaimed.

Since I would be digging the well by hand, I wanted a second opinion. My father asked two local dowsers to come with willow sticks. Each man walked the area at separate times, and each had his sticks practically twist out of his hands at a location within a 10-foot radius of my father's spot. The three agreed I had a strong vein "just 10 to 15 feet down."

I paid the goodly sum of $15 (it was the 1950s) to an elderly gent from one town over to give a final opinion. His apple-wood stick confirmed the others. In May I began to dig. In New Hampshire's rock-strewn soils, pick-and-shovel work produces almost as many sparks as buckets of dirt. By mid-June I had dug to 15 feet. Not the slightest trickle of water. At 20 feet: nothing.

I rang up the $15 expert, who said he couldn't believe I hadn't found water. He came right over and descended the ladder to the bottom of the hole, his dowsing rod hanging from a clothesline around his neck. "Gosh-a-mighty," he yelled, "you got water right under your feet! Just two more shovelfuls and you'll break right into the vein!" I dug through the flinty soil to 32 feet. Still, not a dribble of water.

I once got 10 cents from the Tooth Fairy, who carries more believability for me than any dowser.
Gordon Russell
Weare, New Hampshire

Dear Sir: We employed a dowser who was a member of the American Society of Dowsers, Inc., to find water on our property. We dug our well on the chosen spot and found good water at 145 feet with a 7-gallon-a-minute flow. The dowser had predicted good water at 140 feet with approximately a 6-gallon-a-minute flow. It was an impressive find since our well driller had estimated locating water at 300 to 400 feet.
Richard and Barbara Stubbe
Pisgah Forest, North Carolina

Dear Sir: For the past three years I have been in charge of a cemetery. We keep accurate records and have a map, but at times it is difficult to locate a grave. Probing for older graves is particularly difficult. So an old sexton told me about dowsing. Whenever I walk over a place where I know something or someone is buried, the wires that I'm holding cross. Dowsing also seems to work over suspected grave sites, although I have never dug up anyone to find out.
Frank K. Vitus
Minooka, Illinois

Dear Sir: Has SMITHSONIAN gone New Age on us? Whatever possessed you to publish a totally credulous article on dowsing? What can we expect next month, angels?

We learn that pendulums work just as well as peach branches, that you can do your own dowsing on a map without having to trudge around on foot and that dowsing can even locate an intestinal blockage. I can only assume that the editors felt the subject is so ridiculous that readers would not take it seriously. But do you have any idea what people take seriously these days?
Robert L. Park, Professor of Physics,
University of Maryland
Director of Public Information,
American Physical Society
College Park, Maryland
We thought our readers would be interested and amused to learn of the diverse claims for dowsing. Ed.

Vietnam

Dear Sir: I recently toured Vietnam with a mostly female group of veterans composed of military nurses, and Red Cross and USO workers. I served with the Australian Red Cross in Vung Tau from 1966 to 1967. The Vietnam of Stanley Karnow's fascinating account is the country that we saw.

Karnow mentioned that many U.S. veterans visiting there were finding a better reception than they had as vets returning home after their tours of duty. We had one former grunt in our group who had had a bad war experience in the jungles of Pleiku. One night a group of pedicab drivers took pity and invited our solitary man for a beer. Knowing that many of the drivers are war veterans, and steeling himself against thoughts that cutthroats with long memories of what the Vietnamese call the American War might kidnap him, our grunt went with them. During a long night of drinking, the pedicab drivers confided that the Vietnamese had been worried that the Americans would not like them.
Jean Debelle Lamensdorff
Chadds Ford, Pennsylvania

Deep-sea floor

Dear Sir: As Scientist-in-Charge of Project NEKTON 1959-60, I can assure you that on January 23, 1960, Jacques Piccard and Lt. Donald Walsh took the bathyscaphe *Trieste* down to a historic world-record dive of 35,800 feet, not 37,800 as your article stated. A 1960s state-of-the-art manometer determined that depth within a range of plus or minus 150 feet.

The *Trieste* now resides in the Navy Museum at the Washington Navy Yard in Washington, D.C.
Andreas B. Rechnitzer, PhD
El Cajon, California

Arthur Mole

Dear Sir: It required Arthur Mole and 10,000 male sailors to make a flag in World War I; it took but one female sailor to make a WAVE in World War II.
William L. Phinney
Melrose, Massachusetts

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Around the Mall and Beyond

By Michael Kernan

Protecting museum treasures—paintings by the masters, antique furniture, the delicate wings of a tropical beetle—requires the strictest climate control, right? Maybe not, say these scientists

In Plexiglas "torture chambers," Smithsonian researchers stretch materials to see how much atmospheric change they can withstand. From left: David Erhardt, Charles Tumosa, Mark McCormick-Goodhart and Marion Mecklenburg.

"We could save up to $400,000 on the electric bill for this building alone. Every year." That's what the man said.

I better get this right up top: I'm writing about some Smithsonian scientists who have shown that museums and galleries are spending far too much money on climate control. Photographs, old planes, bones, rare bugs and what have you are much tougher than we thought.

That's the short version. It was not easy to come by.

I had no trouble finding the Conservation Analytical Laboratory Research Group at the Smithsonian's sprawling Museum Support Center at Suitland, Maryland, but the scientists themselves were another story. They spoke a language of numbers, acronyms, graphs and formulas that made me yearn for the simplicity of $E=mc^2$. Slowly I began to make out what they were telling me.

"Until a few years ago, people didn't know precisely how much objects are affected by fluctuations in relative humidity and temperature," explained Charles Tumosa, "but they knew that existing air-conditioning systems could maintain humidity at 50 percent, plus or minus 5 percent. So they felt that was what it should be, and if plus or minus 5 percent was good, plus or minus 2 percent was better." Believing only that too much fluctuation in the atmosphere was bad, museums and galleries concentrated on reducing that tiny plus-or-minus factor.

"As sensor and HVAC (heating, ventilation and air-conditioning) systems got better, they tightened and tightened their specifications, going for that utopian 0 percent. To do anything less would be morally reprehensible. They could spare no expense."

Museum professionals had observed that huge changes in air conditions cause damage; but it wasn't known if small changes over a long period do, too. In the 1970s, administrators at the National Gallery of Art in London, going by certain experiments on wood and recalling their wartime experience when paintings were stored in a cave without damage, set a conservative (if not entirely arbitrary) standard of 55 percent relative humidity for the building.

This standard was designed to accommodate all sorts of substances, with major exceptions such as metal, which corrodes, papers containing acids, and cellulose acetate film base, which breaks down. In other words, at that time museums knew that extreme conditions damage materials, but they did not know how much, or when. So they overcompensated.

This is where the Smithsonian's lab came in. Marion Mecklenburg, for 26 years an art conservator, got a doctorate in engineering just so he could explore this field. He has put together a remarkable team to try to determine exactly how the environment does af-

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fect objects. Mark McCormick-Goodhart, a renowned photographic scientist, holds many patents from his years in industry; PhD chemist David Erhardt comes out of an advanced math background, as do Mecklenburg and Tumosa, a PhD chemist who did forensics for 18 years with the Philadelphia police before coming to the Smithsonian.

"Let's look at the physical and mechanical problem of relative humidity and temperature fluctuations," said Mecklenburg in his brisk way. "No serious work had been done on this. We were the first."

Different materials, different problems. Oil paints, acrylics and other painting media can be damaged by extreme cold, Mecklenburg explained, but they are not especially vulnerable to moisture.

What? I've never heard that. I thought paintings were delicate, I said.

"Well," replied Mecklenburg, "when I was a painting conservator I always wondered why the works from Holland were often in better shape than the ones from Italy. I found out that paint does not respond much to moisture changes. But the Dutch panels tend to have less gesso (a coating applied before painting) than the Italian ones. That gesso is the weak link. It doesn't easily expand and contract in response to large changes in the environment."

Speculating that perhaps things aren't necessarily ruined by slight expansion and contraction, that perhaps they need not be "restrained" in an atmospheric straitjacket, so to speak, the team has been measuring the stresses that many materials—bones, mineral specimens, aircraft surfaces, marine paint, beetle wings and so on—endure before they finally undergo plastic deformation and actually split.

Mecklenburg: "The question then is whether you can directly relate environmental factors to the basic mechanical problems of materials. The answer is: absolutely. We have developed completely new thermodynamic models that show the exact relationship of temperatures and relative humidity to the mechanical properties of materials."

What's more, the findings have been computerized, producing analytical models for all sorts of materials, enabling Mecklenburg and his team to literally predict the splitting point of, say, yak leather. Armed with exact knowledge of the safety margins, museums no longer have to overcorrect. The difference in costs is staggering.

"The energy cost of this building alone is $1.2 million a year," noted Mecklenburg. "Each little room has its own micro-HVAC system. The newer buildings have insulation to prevent condensation on the walls. The older ones don't. In the old Arts and Industries Building, moisture condenses between the ceiling and the roof, and in the summer it actually rains in there."

Dehumidifiers in summer and humidifiers in winter are the answer, but in any large building the cost of bringing the fluctuations below 5 percent is tremendous. The National Museum of Natural History spends $1.2 million a year on controlling its environment; if it were to try to follow conventional museum standards, the cost would double.

The current specifications for the future National Air and Space Museum annex at Dulles Airport call for 43 percent relative humidity with a margin for error of plus or minus 2 percent. "That's a hangar!" Mecklenburg exclaimed. "You'll never get that kind of control. The energy costs would be ridiculous. If they heed our recommendations, that annex could save $45 million over 30 years in its electric bill."

The National Gallery of Art already saves $100,000 a year because it has relaxed the allowable fluctuations in just one part of the building by a mere 2 percent.

The word is out. So far, at least 80 museums and exhibit organizations from all over the world have requested information on the team's new approach, and some have already reported huge savings. So the lab team is saying tighter controls are not necessary. And I'm asking how they know this.

I began to find out when I saw the lab itself. Scattered all around are little Plexiglas boxes, 36 of them, tiny torture chambers full of dials and wires and clamps. Inside are temperature gauges and enough silica gel to control the relative humidity.

A thick strip of, say, rabbit skin glue, often used in art construction, is set between pincers that want to pull it apart lengthwise. For two years it is stretched, bit by bit, until it is elongated by 4 percent, at which point, the team discovered, it will break.

The lab team has found that changes as great as plus or minus 15 percent relative humidity will cause stretching of only 0.4 percent, a mere one-tenth of the actual breaking point. This and numerous tests of other materials are showing that it is overkill for museums to worry about minuscule variations in the atmosphere.

Inside the boxes are little gauges and other devices to test the all-but-invisible changes in materials. I saw tests on whalebone, epoxy glue, egg tempera paint, whale teeth, aircraft paint, various woods and a waterbug's shell. The lab has hundreds of paint samples, some dating back nearly 20 years and saved up by Mecklenburg for just such a purpose.

Though most of the work concerns long-term change, the team has also discovered things about short-term changes, such as vibration and shock, as when a careless forklift operator drops a Da Vinci portrait. "We're learning how to pack things more efficiently in terms of their fragility," he noted. "For instance, the vibration from trucks isn't as bad as we had thought."

He showed me some graphs that David Erhardt has been working up, defining a correlation between chemical degradation and physical behavior. Then he treated me to some serious formulas that have emerged from all this experimentation, formulas that predict the elastic behavior of any material in various physical conditions.

"Our research has many important applications in the non-museum world. We could tell, for example, if there's going to be a strain on the walls of a nuclear reactor when it is flushed with cold water during an emergency. We can predict stresses on airplanes. Up to now, planes made from composites have probably been overdesigned. If you don't know the exact dangers, you overdesign."

Naturally, with the prospect of gigantic savings in building and maintenance, industry has taken notice of the team's work. And the team has recently joined forces with the University of Maryland to submit a proposal for a National Science Foundation grant.

Recommendations by Mecklenburg and Tumosa for atmospheric control parameters in all the Smithsonian Institution buildings are currently under study, and it looks likely that savings of $2 million a year will be possible. So now no one is sneering at those quiet guys down the hall who seemed to be just fiddling around stretching paint.

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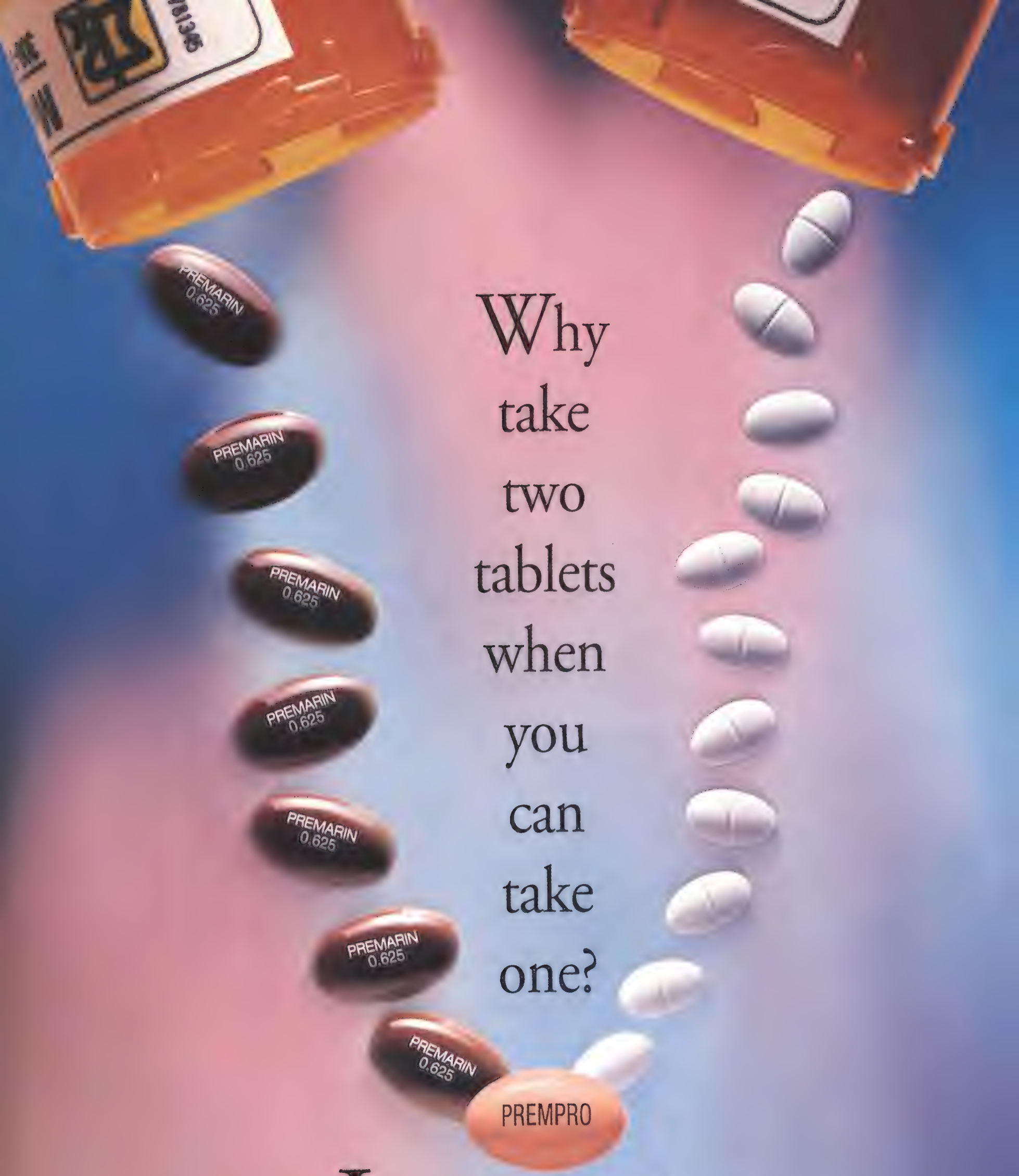

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SIDE EFFECTS OF HORMONES SHOULD BE CONSIDERED. If you have not had a hysterectomy, estrogen alone can increase the risk of cancer of the uterus. The addition of progestin, however, may reduce this risk. That is why many doctors and health care providers now prescribe progestin in conjunction with estrogen for their patients. Progestins may have unfavorable effects on blood sugars, which might make a diabetic condition worse. The most common side effects are breast tenderness, headache, and abdominal pain.

When you speak to your doctor or health care provider about hormone replacement therapy, be sure to discuss your personal and family history of breast cancer, breast lumps, abnormal vaginal bleeding, abnormal blood clotting, severe headache, dizziness, or liver disease. Women who are pregnant should not take hormone replacement therapy.

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BRIEF SUMMARY OF PRESCRIBING INFORMATION FOR THE PATIENT

PREMPRO™ Brand of conjugated estrogens/medroxyprogesterone acetate tablets

This summary describes when and how to use estrogen/progestin drugs and the benefits and risks of treatment

ESTROGENS INCREASE THE RISK OF CANCER OF THE UTERUS IN WOMEN WHO HAVE HAD THEIR MENOPAUSE ("CHANGE OF LIFE"). *THIS FINDING REFERS TO ESTROGENS GIVEN WITHOUT PROGESTIN.*

Progestin drugs taken with estrogen-containing drugs significantly reduce but do not eliminate this risk. If you use any estrogen-containing drug, it is important to visit your doctor regularly and report any unusual vaginal bleeding right away. Vaginal bleeding after menopause may be a warning sign of uterine cancer. Your doctor should evaluate any unusual vaginal bleeding to find out the cause.

ESTROGENS/PROGESTINS SHOULD NOT BE USED DURING PREGNANCY.

Estrogens do not prevent miscarriage (spontaneous abortion) and are not needed in the days following childbirth. If you take estrogens during pregnancy your unborn child has a greater than usual chance of having birth defects. These birth defects may affect the baby's urinary system and sex organs.

ESTROGEN/PROGESTIN DRUGS

PREMPRO is a combination of two hormones, an estrogen and a progestin. This hormone combination has been shown to provide the benefits of estrogen replacement therapy while lowering the frequency of a possible precancerous condition of the uterine lining. This therapy is not intended for women who have had a hysterectomy (surgical removal of the uterus).

Estrogens have several important uses but also some risks. You must decide, with your doctor, whether the risks of estrogens are acceptable when weighed against their benefits. Check with your doctor to make sure you are using the lowest possible effective dose.

With PREMPRO therapy several menstrual-like bleeding patterns may occur. These may range from absence of bleeding to irregular bleeding. If bleeding occurs, it is frequently light spotting or moderate menstrual-like bleeding, but it may be heavy. Please discuss your bleeding pattern and set up an appropriate schedule for follow-up care with your physician.

USES OF ESTROGEN

To reduce menopausal symptoms. Estrogens are hormones produced by the ovaries of normal women. The decrease in the amount of estrogen that occurs in all women, usually between the ages of 45 and 55, causes menopause. Sometimes the ovaries are removed during an operation causing "surgical menopause." When the amount of estrogen begins to decrease, some women develop very uncomfortable symptoms, such as feelings of warmth in the face, neck, and chest, or sudden intense episodes of heat and sweating ("hot flashes" or "hot flushes"). Using estrogen drugs can help the body adjust to lower estrogen levels and reduce these symptoms. Some women have none or only mild menopausal symptoms; in others, symptoms can be severe. These symptoms may last only a few months or longer. Taking PREMPRO can alleviate these symptoms. If you are not taking hormones for other reasons, such as the prevention of osteoporosis, you should take PREMPRO only as long as you need it for relief from your menopausal symptoms.

To prevent brittle bones. After age 40, and especially after menopause, some women develop osteoporosis. This is a thinning of the bones that makes them weaker and more likely to break, often leading to fractures of spine, hip, and wrist bones. Taking estrogens after the menopause slows down bone loss and may prevent bones from breaking. Eating foods that are high in calcium (such as dairy products) or taking calcium supplements (1000 to 1500 milligrams per day) and certain types of exercise may also help prevent osteoporosis. Since estrogen use is associated with some risks, its use in the prevention of osteoporosis should be limited to women who appear susceptible to this condition. The following characteristics are often present in women who are likely to develop osteoporosis: white or Asian race, thinness, cigarette smoking, family history, and early or surgical menopause.

To treat vulvar and vaginal atrophy (itching, burning, dryness in or around the vagina, difficulty or burning on urination) associated with menopause.

WHEN ESTROGENS SHOULD NOT BE USED

During pregnancy (see Boxed Warning). If you think you may be pregnant, do not use any form of estrogen-containing drug. Using estrogens while you are pregnant may cause your unborn child to have birth defects. Estrogens do not prevent miscarriage.

If you have unusual vaginal bleeding which has not been evaluated by your doctor (see Boxed Warning). Unusual vaginal bleeding can be a warning sign of cancer of the uterus, especially if it happens after menopause. Your doctor must find out the cause of the bleeding so that he or she can recommend the proper treatment. Taking estrogens without visiting your doctor can cause you serious harm if your vaginal bleeding is caused by cancer of the uterus.

If you have had cancer. Since estrogens increase the risk of certain types of cancer, you should not use estrogens if you have ever had cancer of the breast or uterus.

If you have any circulation problems. Estrogen drugs should not be used except in unusually special situations in which your doctor decides that you need estrogen therapy so much that the risks are acceptable. Women with abnormal blood clotting conditions should avoid estrogen use (see **RISKS OF ESTROGENS AND/OR PROGESTINS**).

When they do not work. During menopause, some women develop nervous symptoms or depression. Estrogens do not relieve these symptoms. You may have heard that taking estrogens for years after menopause will keep your skin soft and supple and keep you feeling young. There is no evidence for these claims and such long-term estrogen use may have serious risks.

After childbirth or when breast-feeding a baby. Estrogen should not be used to try to stop the breast from filling with milk after a baby is born. Such treatment may increase the risk of developing blood clots (see **RISKS OF ESTROGENS AND/OR PROGESTINS**).

If you are breast-feeding, you should avoid using any drugs because many drugs pass through to the baby in the milk. While nursing a baby, you should take drugs only on the advice of your health care provider.

RISKS OF ESTROGENS AND/OR PROGESTINS

Cancer of the uterus. The risk of cancer of the uterus increases when estrogens are used alone, the longer they are used, and when larger doses are taken. There is a higher risk of cancer of the uterus if you are overweight, diabetic, or have high blood pressure.

The hormone combination you will be taking contains estrogen and progestin. This combination has been shown to provide the benefits of estrogen replacement therapy while reducing the risk of a precancerous condition of the uterine lining.

Additional risks may be associated with the inclusion of a progestin in estrogen treatment. The possible risks include unfavorable effects on blood fats and sugars. Usually, the smaller the dose and the shorter the duration of treatment, the more these effects are minimized. Check with your doctor to make sure you are using the lowest effective dose and only for as long as you need it.

Cancer of the breast. Most studies have not shown a higher risk of breast cancer in women who have ever used estrogens. However, some studies have reported that breast cancer developed more often (up to twice the usual rate) in women who used estrogens for long periods of time (especially more than 10 years), or who used high doses for shorter time periods. The effects of added progestin on the risk of breast cancer are unknown. Some studies have reported a somewhat increased risk, even higher than the possible risk associated with estrogens alone. Others have not. Regular breast examinations by a health professional and monthly self-examination are recommended for all women.

Gallbladder disease. Women who use estrogens after menopause are more likely to develop gallbladder disease needing surgery than women who do not use estrogens.

Inflammation of the pancreas. Women with high triglyceride levels may have an increased risk of developing inflammation of the pancreas.

Abnormal blood clotting. Taking estrogens may increase the risk of blood clots. These clots can cause a stroke, a heart attack, or a pulmonary embolus, any of which may cause death or serious long-term disability.

Excess calcium in the blood. Taking estrogens may lead to severe hypercalcemia in women with breast and/or bone cancer.

During pregnancy. There is an increased risk of birth defects in children whose mothers take this drug during the first four months of pregnancy. Several reports suggest an association between mothers who take these drugs in the first trimester of pregnancy and genital abnormalities in male and female babies. The risk to the male baby is the possibility of being born with a condition in which the opening of the penis is on the underside rather than the tip of the penis (hypospadias). Hypospadias occurs in about 5 to 8 per 1,000 male births and is about doubled with exposure to these drugs. There is not enough information to quantify the risk to exposed female fetuses. However, enlargement of the clitoris and fusion of the labia may occur, although rarely.

Therefore, since drugs of this type may induce mild masculinization of the external genitalia of the female fetus, as well as hypospadias in the male fetus, it is wise to avoid using the drug during the first trimester of pregnancy. These drugs have been used as a test for pregnancy, but such use is no longer considered safe because of possible damage to a developing baby. Also, more rapid methods for testing for pregnancy are now available. If you take PREMPRO and later find you were pregnant when you took it, be sure to discuss this with your doctor as soon as possible.

SIDE EFFECTS WITH ESTROGENS AND/OR PROGESTINS

In addition to the risks listed above, the following side effects have been reported with estrogen and/or progestin use:

- Nausea, vomiting; pain, cramps, swelling, or tenderness in the abdomen
- Yellowing of the skin and/or whites of the eyes
- Breast tenderness or enlargement
- Enlargement of benign tumors of the uterus
- Irregular bleeding or spotting
- Change in amount of cervical secretion.
- Vaginal yeast infections
- Retention of excess fluid. This may make some conditions worsen, such as asthma, epilepsy, migraine, heart disease, or kidney disease
- A spotty darkening of the skin, particularly on the face; reddening of the skin; skin rashes
- Worsening of porphyria
- Headache, migraines, dizziness, faintness, or changes in vision (including intolerance to contact lenses)
- Mental depression.
- Involuntary muscle spasms
- Hair loss or abnormal hairiness
- Increase or decrease in weight
- Changes in sex drive
- Possible changes in blood sugar

REDUCING THE RISKS OF ESTROGEN/PROGESTIN USE

If you decide to take an estrogen/progestin combination, you can reduce your risks by carefully monitoring your treatment.

See your doctor regularly. While you are taking PREMPRO, it is important to visit your doctor at least once a year for a checkup. If you develop vaginal bleeding while taking estrogens, you may need further evaluation. If members of your family have had breast cancer or if you have ever had breast lumps or an abnormal mammogram (breast X ray), you may need to have more frequent breast examinations.

Reassess your need for treatment. You and your doctor should reevaluate your need for estrogens at least every six months.

Be alert for signs of trouble. Report these or any other unusual symptoms to your doctor immediately.

- Abnormal bleeding from the vagina
- Pains in the calves or chest, a sudden shortness of breath, or coughing blood
- Severe headache or vomiting, dizziness, faintness, or changes in vision or speech, weakness or numbness of arm or leg
- Breast lumps
- Yellowing of the skin and/or whites of the eyes
- Pain, swelling, or tenderness in the abdomen

OTHER INFORMATION

Estrogens increase the risk of developing a condition (endometrial hyperplasia) that may lead to cancer of the lining of the uterus. Taking progestins, another hormonal drug, with estrogens lowers the risk of developing this condition.

You should know, however, that taking estrogens *with* progestins may have unhealthy effects on blood sugar, which might make a diabetic condition worse.

Some research has shown that estrogens taken *without* progestins may protect women against developing heart disease. However, this is not certain. The protection shown may have been caused by the characteristics of the estrogen-treated women and not by the estrogen treatment itself. In general, treated women were slimmer, more physically active, and were less likely to have diabetes than the untreated women. These characteristics are known to protect against heart disease.

It is important to discuss, in detail, with your doctor or health care provider all the possible risks and benefits of long-term estrogen and progestin treatment as they affect you personally.

This Summary provides the most important information about PREMPRO. If you want to read more, ask your doctor or pharmacist to let you read the professional labeling.

This Brief Summary for Direct-to-Consumer Advertising is based on the current PREMPRO Tablets insert (PI 4665-1) issued November 15, 1995, with the incorporation, in lay language, of pertinent text from the Physician Insert, (CI 4664-1) issued November 17, 1995.

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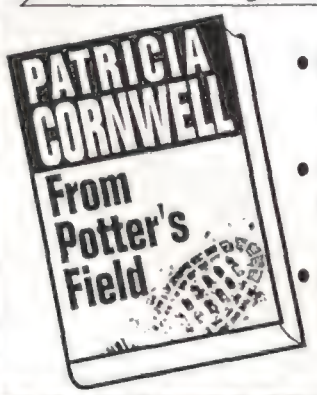

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Smithsonian Highlights

Plan a Smithsonian Visit in 1996!

Join in the fun as the Smithsonian celebrates its 150th anniversary with a year of special exhibitions and events. *Receive a free Associates' planning packet.* Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call (202) 357-2700 (voice) or (202) 357-1729 (TTY), 9 A.M.- 5 P.M., Monday-Friday; 10 A.M.- 4 P.M., Saturday-Sunday. *Note:* Parking near the Smithsonian is limited. The Metrorail subway, convenient to all museums, has parking available at some stations (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M.- 4 P.M. daily—in the Castle. Special materials await you there.

Museum Hours

Smithsonian museums are generally open 10 A.M.- 5:30 P.M. daily, except December 25. Hours at the National Zoo are 9 A.M.- 4:30 P.M. daily for buildings and 8 A.M.- 6 P.M. for grounds.

Smithsonian Kite Festival

Kite enthusiasts from around the world will gather on the grounds of the Washington Monument on Saturday, March 30, for the Smithsonian's 30th annual Kite Festival, cosponsored by the Smithsonian Associates and the National Air and Space Museum. (Rain date: Sunday, March 31.) Call (202) 357-3030.

Special March Exhibits, Events

National Air and Space Museum
The Enola Gay (runs indefinitely) Exhibition features the forward fuselage of the *Enola Gay*, the B-29 that dropped the atomic bomb on Hiroshima.

National Museum of Natural History
Landscape Kimonos by Itchiku Kubota (through May 12) Elaborate handcrafted kimonos by the Japanese textile artist.
Gems and Minerals Hall The hall is closed for renovation until December 1996. The famous Hope Diamond is on view on the second floor of the Rotunda.

National Zoological Park
Think Tank New permanent exhibit explores the biology and evolution of animal thinking.

National Museum of American History
Science in American Life Permanent exhibition tracks advances and discoveries in science over the past 125 years.
Information Age: People, Information and Technology Permanent show traces 150-year history of information technology.

National Postal Museum
Located next to Union Station on Capitol Hill, the museum presents exhibitions that illuminate the history of the nation's mail service.

The Castle—Great Hall
Smithson's Gift (runs indefinitely) Display tells the story of the British scientist whose bequest founded the Smithsonian 150 years ago.

Freer Gallery of Art
Crosscurrents in Chinese and Islamic Ceramics (opens March 1) Exhibit explores the stylistic influences that resulted from trade between China and the Near East.
Choice Spirits (March 9-Spring 1997) Works by American tonalist painters Thomas Dewing and Dwight Tryon.

Arthur M. Sackler Gallery
Painted Prayers (through April 7) Photographs by Stephen P. Huyler document ritual paintings executed by Indian women on the walls of their homes.

National Museum of African Art
Seydou Keita, Photographer: Portraits from Bamako, Mali (1950-1960) (March 27-July 28) Evocative portraits by the self-taught photographer.

Hirshhorn Museum & Sculpture Garden
Directions—Beverly Semmes (March 21-June 23) Monumental fabric sculpture by the Washington-born artist.

Arts and Industries Building Discovery Theater
Peter Rabbit (March 4-15) *Women Who Dare* (March 11-29) For information, show times, call (202) 357-1500 (voice or TTY).

National Portrait Gallery
Rebels: Painters and Poets of the 1950s (through June 2) Exhibition looks at the artists and writers of the Beat Generation and the New York School.

National Museum of American Art
Metropolitan Lives: The Ashcan Artists and their New York (through March 17) Works by the American "Ashcan School" artists.

Renwick Gallery
Mark Lindquist: Revolutions in Wood (March 15-July 7) Show surveys the art of this distinguished woodturner.
Lia Cook: Material Allusions (March 15-July 7) Innovative wall hangings.

Cooper-Hewitt, National Design Museum (New York)
Gallery Closing The exhibition galleries of the museum are closed to the public for renovation until September 17.
The Avant-Garde Letterhead (March 13-May 8) Exhibit held at the American Institute of Graphic Arts includes writing paper and postcards.

Heye Center, National Museum of the American Indian (New York)
Creation's Journey: Masterworks of Native American Identity and Belief (runs indefinitely) Inaugural exhibition features 165 objects.

The Smithsonian Associates, Resident Program

To become a member, call (202) 357-3030. March events include:
Art in Celebration! Works from the Smithsonian Associates Collection (March 21-24, at Washington's Union Station) Traveling exhibition, presented by Artrain in collaboration with SITES and the Smithsonian Associates, showcases prints commissioned to celebrate events in the Institution's history.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560.
• Montezuma, Kansas (February 24-April 7) *The Prairie Schoolhouse: A Photo Essay by John Martin Campbell,* Stauth Memorial Museum. See *Highlights Continued,* page 28.

Highlights Continued

Schoolhouses of the Western prairie

Photographer and anthropologist John Martin Campbell grew up in the sagebrush country of eastern Washington State, where he attended a local two-room schoolhouse. Now a research professor in anthropology at the University of New Mexico, Campbell has created a striking photographic record of a singularly American institution—the prairie schoolhouse. Bent on seeking out and documenting the remains of these enduring symbols of homestead life, Campbell traversed 14 states from 1990 to 1994, detailing 60 sites. The fruits of this quest can now be seen in a touring exhibition developed by the Smithsonian Institution Traveling Exhibition Service. On view through April 7 at the Stauth Memorial Museum in Montezuma, Kansas, "The Prairie Schoolhouse" will travel to 20 North American venues.

The Homestead Act of 1862 offered the promise of free parcels of public land to citizens over 21 who cleared, improved and lived on that land for at least three years. During the late 19th and early 20th centuries, thousands of homesteaders headed West. Some struggled with the semiarid terrain and lost, but many succeeded, and those farms prospered well into the 1930s, when the Great Depression and Dust Bowl droughts conspired to devastate them. Though building materials were scarce and children were often able to attend school only in the winter months, communities took great pride in their local schools and nearly every community built one. The remains of these structures stand as poignant mementos of pioneer life on the prairies. From sweeping views of one-room schoolhouses set against vast expanses of sky to intimate studies of objects once used by prairie children and their teachers, Campbell's photographs evoke a time of potbellied stoves and home-canned peaches, and stir memories of the closing chapter in the opening of the American West.
Diane M. Bolz

Campbell used a large-format view camera to capture the isolation of the Silvies School, built c. 1920 in Grant County, Oregon. Structure boasts a steeply gabled roof, belfry and storm vestibule.

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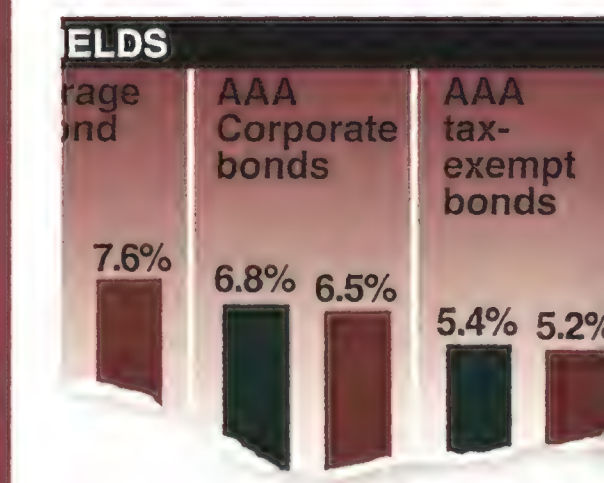

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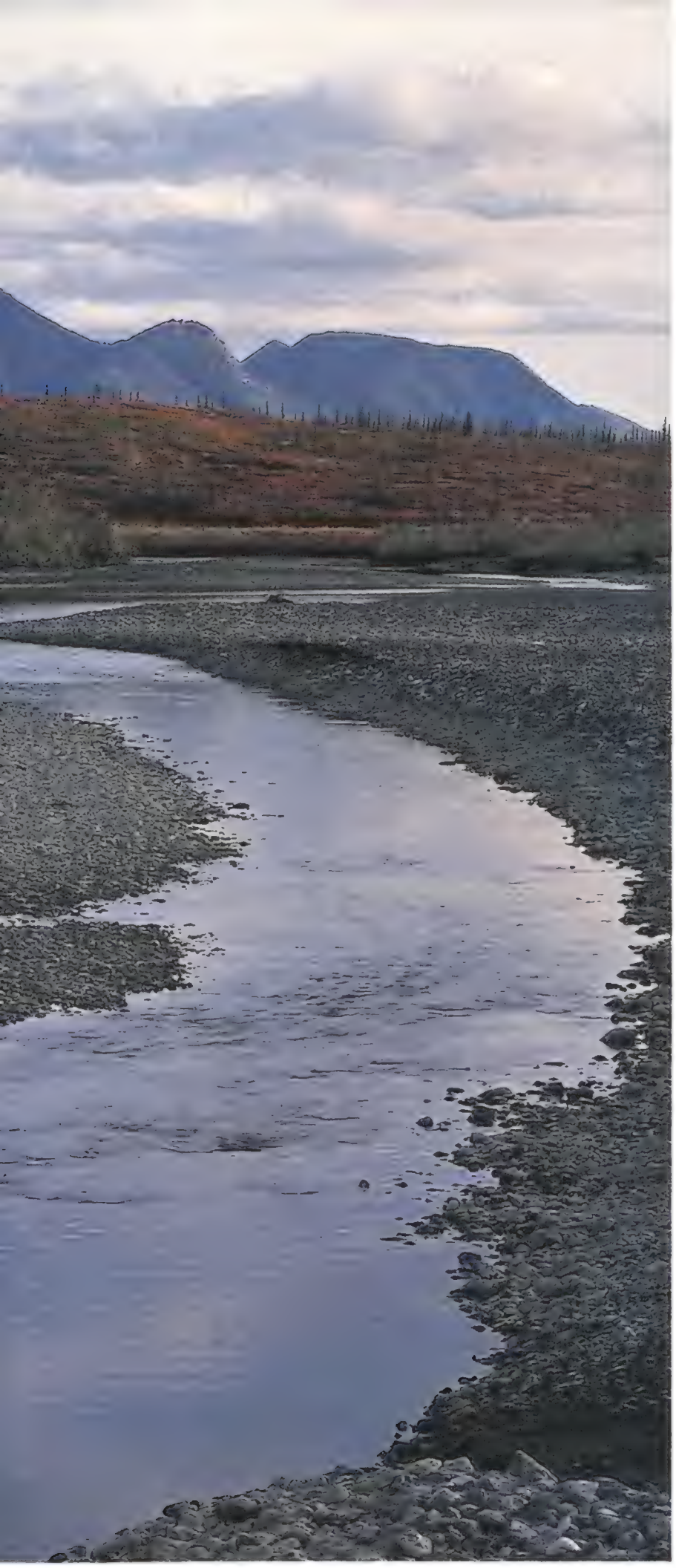
By Jim Doherty

The Arctic National Wildlife Refuge: the best of the last wild places



Beneath peaks of Alaska's Brooks Range, shallow fork of Sheenjek River snakes past yellowing willow stands.

There are other glorious wilderness areas in America but none quite as magnificent, as controversial or as far north as this one

Bears, bears, bears.

My backpacking partner and I have been on the loose for more than a week now in a splendid chunk of northeastern Alaska only slightly smaller than the state of Maine. This is the Arctic National Wildlife Refuge, commonly known as ANWR or "the Arctic." It's one of the two or three largest protected wildernesses in the United States and by far the most controversial. Oil companies are pushing hard to get in, preservationists are battling to keep them out, and the clash has been front-page news for months. We came here to see what all the fuss is about, but ever since we rendezvoused with our bush pilot in Fort Yukon, we've been distracted, if that's the right word, by the presence of bears. Grizzly bears, to be precise.

It began when the hunting guide who helped us load our gear into Don Ross' Cessna 185 recounted how a surly sow had charged him a week earlier on the Kongakut River, not far from where we were headed.

"I shouted at her, but she kept coming," he said. "Next I threw my hat, and she still kept coming. Then I whipped off my backpack and heaved that at her, and she finally stopped." He smiled innocently.

"Thank you for sharing that with us," I said.

On the way up, Ross spotted a mother and a pair of cubs moseying around near Last Lake. Making an approach for a landing on the meadow next to Joe Creek, we flew over a dark, humpbacked figure lurking in a stand of willows. It ran off into a nearby ravine. A couple of days later, we roused a magnificent she-grizz with her two youngsters several miles downstream. The same thing happened again when we were camped on the west branch of the Sheenjek River, only this time the creatures were in no hurry to leave.

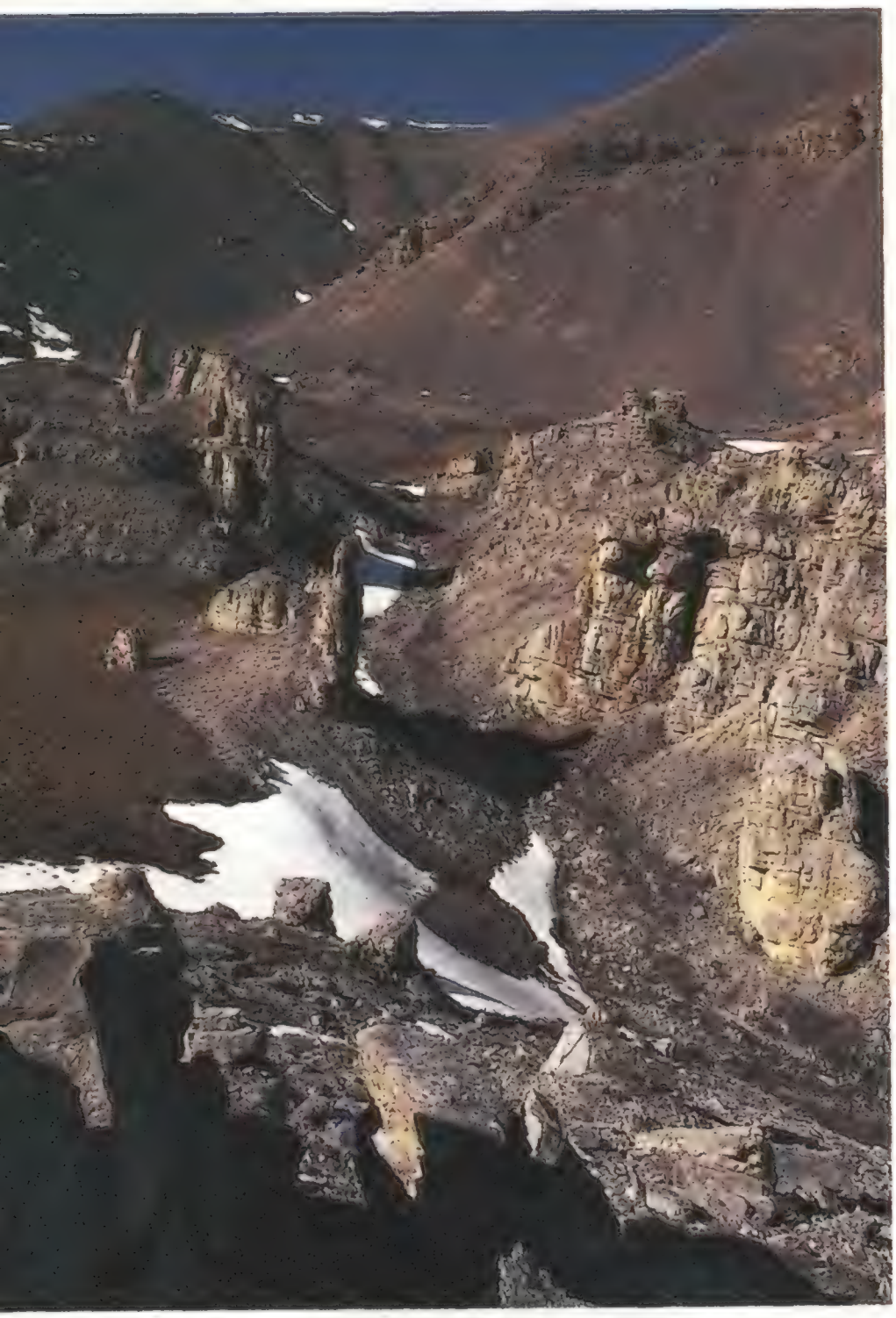
You can encounter grizzlies just about anywhere in Alaska, but somehow it seems almost obligatory to get spooked by them in the Arctic Refuge. Like the bear, it is huge, exciting and full of surprises. It extends all the way from the shrubby flats of the Porcupine River northward across the majestic Brooks Range to the Beaufort Sea, 200 miles away. It contains nearly 20 million acres of mountains, valleys and tundra, 18 major river systems and a vivid swath of coastal plain that serves as the summer range of the Porcupine caribou herd. It is home to wolves and Dall sheep, musk-oxen and moose, sea lions, whales and walruses. It's a jumble of peaks and ridges, an infinity of tawny hillsides.

Unlike the grizzly, however, the Arctic is not as tough as it looks. Its solitude and silence are easily disrupted. Underlaid by permafrost, much of the land is fragile, and the arid northern climate makes it exceptionally vulnerable to physical abuse.

The folks who created the preserve back in the 1950s understood this. Development was not what they had in mind. They knew that wildlife refuges in "the lower 48"

were open to mining, logging and many other kinds of private enterprise. But the Arctic was supposed to be special—no mere table scrap of habitat but a sumptuous feast of wilderness, not a refuge in any conventional sense of the word but "an inviolate wildlife sanctuary," as one of its founding fathers put it, large enough to be biologically self-sufficient and strictly off-limits to commercial use.

Until now, at least, that's pretty much the way it has worked out. Notwithstanding repeated attempts to chip away at it for one thing or another, the Arctic Refuge remains basically intact—a bit bloodied, perhaps, but unbowed. And to thousands of conservationists and other admirers all over the country, it is indeed more than a park or a refuge, more than a preserve. It's different from anything that has ever existed. It is, in a very real sense, hallowed ground, a sacred trust—the biggest and best of the last wild places.



Fantastic shapes chiseled out of limestone mountains by frost and water cast long shadows in the Arctic sun.

The struggle to set aside this jewel of the North began not long after the end of World War II, a time when a lot of things were happening at once in Alaska. The drive for statehood was well under way, with all that implied for future disposal of the Territory's 570,000 square miles of land, and the search for oil across the North Slope was on in earnest. In 1950, an Arctic expert warned Olaus Murie about the dire implications of industrialization for the wilderness there. Murie, a wildlife biologist based in Moose, Wyoming, was the president of a small but potent national group that called itself the Wilderness Society. He in turn shared his concerns with George Collins and Lowell Sumner, who were spearheading an effort by the National Park Service to identify areas in Alaska worthy of protection.

Collins, a big, outgoing man with an impish sense of humor, was a senior planner in the agency's San Francisco office. The tall, balding Sumner (Collins called him "Doc") was a biologist, photographer and pilot. Sumner was less extroverted than Collins and much more the pure scientist, but the two men shared a boyish enthusiasm for the outdoor life that prompted a mutual acquaintance to refer to them, years later, as "soul mates." They traveled all over Alaska, inventorying plants and animals and taking note of outstanding features. After a while, they began to pay special attention to the immense region north of Fort Yukon, between the Canning River and the Canadian border.

Collins had been advised by the U.S. Geological Survey that this part of Alaska would remain well beyond the reach of any future oil and gas exploration. "(It) seemed to us to be the very best we could find for major park purposes anywhere in the Arctic," he later recalled. It boasted the region's highest peaks and most extensive glaciers. It was, he and Sumner discovered, a "completely undisturbed" cross section of Arctic terrain. As for the scenery, Collins enthused, it was "enthralling . . . simply stupendous, beyond description." He and Sumner decided the area should be preserved—all of it.

They spent one summer camping in Sheenjek River country, at Last Lake, and at Schrader Lake, where they hooked up with the eminent Scottish ecologist F. Fraser Darling and zoologist A. Starker Leopold. The next year they scouted the Kongakut and Firth River drainages.

Collins ventured into the Firth area for the first time with Hugh House, a colorful pilot from Fairbanks who had done some prospecting near Joe Creek and knew a meadow where he could land. After establishing a base camp not far from the dense stands of willows that grew beside the creek, Collins and Sumner were entertained there by moose and several dozen mountain sheep, and

Alert to the presence of an intruder, mother grizzly and cubs ponder whether to flee or stand their ground.

The huge creatures (adult males may exceed 400 pounds) can be dangerous when surprised or cornered.

a resident grizzly who hauled off and whacked her rambunctious cubs whenever they got out of line.

Fieldwork was tough in that rugged country, and travel hazardous. In his book *Pelican in the Wilderness*, Darling tells what happened one day when the plane that was carrying the party through unfamiliar mountains flew into a vicious downdraft. After the pilot of the old Norseman coolly averted a crash, Sumner announced: "I wasn't frightened because I thought we were finished."

Once Sumner and Collins had done all they could inside the Park Service to lay the foundation for some kind of Arctic preserve, Collins, who was known for his persistence and political savvy, began looking for outside help. It was time for someone to "[take] over from us, sponsoring a movement . . . toward appropriate status," Collins told Murie. "Lowell and I believe you and Starker are the ones to work that out." Leopold was an influential member of a conservation and hiking group in California called the Sierra Club, and Murie was still running the Wilderness Society. It wasn't long before their organizations, and a number of others, as well, had enlisted in the cause, and Murie took the lead.

He was the perfect man for the job. The preservation of wilderness for its own sake was still a novel idea in those days, especially in the Far North. Many Alaskans stood ready to fight *any* federal moves in that direction, but Murie knew how to handle them. Before settling in Wyoming, he and his wife, Mardy, who grew up in Fairbanks, had spent six years in Alaska, where he studied caribou and led expeditions into the Brooks Range by dogsled. He was a highly regarded scientist, an accomplished artist and a fine writer, but it was his Lincolnesque presence that many of his admirers found so compelling. "Olaus Murie is one of America's great men," a colleague once proclaimed, adding: "He has the tremendous asset of simplicity."

The Muries spent a summer camping and exploring in the Sheenjek region. Afterward they talked to sportsmen's groups and other organizations in Alaska about what they had seen and felt and done up there. They returned the following year to continue the dialogue. "I have adopted a go-easy method," Olaus Murie told

Jim Doherty, a member of the Board of Editors, has written recently about Deep Springs College, the trumpeter Bud Herseth and the Green Bay Packers.

Collins. "I can't remember a time when I came right out and said: 'Support this wilderness proposal.' . . . [I want] them to make up their own minds. Without the sincere backing of people who have thought the thing through, I feel we can get nowhere."

The strategy worked. People responded to Murie's go-easy approach. The grass-roots support he deemed so essential gained momentum, even as the idea of an Arctic wilderness began to receive serious consideration in Washington. Clarence Rhode, a charming old Alaska hand who was the regional director of the U.S. Fish and Wildlife Service, shrewdly arranged to fly one of Interior Secretary Fred Seaton's top aides over the proposed area. Thereafter, Interior came up with a bill to establish the Arctic National Wildlife Range (later Refuge).

Earlier Murie, Collins, Rhode and a handful of other prime movers had met to consider who should run the preserve. Collins and Sumner were reconciled by then to certain political facts of life that pretty much ruled out national park status. Indians and Eskimos in the area would have to be allowed to continue subsistence hunting and trapping. Sport hunting and prospecting were issues, too. "It was concluded that it would have the least development if we put it in the Fish and Wildlife Service," Murie reported afterward, adding somewhat uncertainly: "I hope we were right."

At one point Rhode, leaving nothing to chance, had dragooned Seaton himself into joining him for a personal plane tour. Evidently the boss liked what he saw. Eventually, once it became clear that the necessary legislation would not pass Congress, due mainly to the opposition of Alaska's Senators, Seaton took matters into his own hands. He issued an executive order establishing the predecessor to the present-day refuge. When the Muries heard the news, they wept for joy.

Nearly a decade passed before the Arctic had its first manager, a tall, taciturn biologist and pilot named Averill Thayer. At first, Thayer didn't have a staff, but he did have a fierce commitment to keeping development out of the refuge. He also had a staunch ally in the Alaska Conservation Society.

Organized at the outset of the Arctic campaign, the society was a tiny watchdog group, but it had sharp teeth and plenty to chew on. Over the years, it defended the refuge against one cockamamy scheme after another—a huge hydroelectric dam, a natural-gas pipeline, a "wolf control" program, a mind-boggling plan to use atomic explosions to create a deepwater port.

Two mainstays of the group, Celia Hunter and Ginny Wood, became friends while serving as WASPs (Women's Air Force Service Pilots) in World War II. After the war, they flew cargo and tourists in Alaska, where they started what would become a famous backcountry camp near Mount McKinley. Throughout the wrenching process of Alaskan land settlement, they were in the vanguard of the fight for wilderness preservation.

The 1980 Alaska National Interest Lands Conservation Act, the capstone of settlement, set aside 100 million-plus acres in the 49th state for national parks and refuges, more than doubling the size of the Arctic alone. But it left the coastal plain open to development. The refuge was not, it turned out, beyond the reach of oil and gas exploration after all.

The reasons were not hard to find. In the 1970s, the Trans-Alaska Pipeline was built to convey oil from the wells at Prudhoe Bay on the North Slope to the port of Valdez in the south. Sooner or later, Prudhoe was bound to play out, and when it did, the pipeline would still be there. Geologists had long entertained second thoughts about whether the Arctic Refuge's coastal plain might be worth exploring. With the country importing so much of its oil from overseas, developers and their allies in Congress invoked the national interest to justify going in there.

More than once in the past 20 years, leasing has seemed imminent. Each time, Wood, Hunter and other conservationists in Alaska joined forces with national coalitions to oppose it. Thanks to political good fortune and the *Exxon Valdez*, they prevailed. "I really do believe someone or something must be watching over the Arctic," Hunter told me in Fairbanks last fall, "because it has taken a series of miracles to keep it intact."

At the time, it was beginning to look like another miracle was due. Congress had made oil revenues from the coastal plain part of the 1996 budget bill, and the debate over the refuge was back in the headlines. Developers cited declining production at Prudhoe and insisted that the impact of exploration and drilling would be tolerable. Environmentalists disputed the production figures and argued that disruption on such a massive scale would threaten both the Porcupine caribou herd and the subsistence lifestyle of the native peoples who depend on it. The refuge's fate remained in doubt as the new year got under way, with President Clinton and Congress locked in a seemingly hopeless stalemate over the budget bill.

So, what *is* all the fuss about?

It's about bears, yes, and fresh wolf tracks in the black, wet sand of a rocky creekbed. It's about bleached moose antlers, caribou horns and Dall sheep skulls scattered across the tundra like toys. It's about 60 mountain peaks in the 50-mile sweep of horizon visible from your campsite, and the certain knowledge that you and your companion are the only human beings on the face of the Earth who can see them. It's about polar light—the blinding majesty of the Arctic sun at 8 o'clock on an autumnal evening, the color golden, the angle flat. It's about 50 kinds of weather in a single day, all bad. It's about the scream of an eagle and the arc of a falcon slicing across the lavender sky. It's about slogging through icy streams and knee-deep bogs that suck your boots off, staggering over tussock-studded plains and dragging

At left, long before geodesic tents and freeze-dried food, Olaus(left) and Mardy Murie dined with biologist Robert Krear on Sheenjek River. The Muries generated grass-roots support among Alaskans for creating an Arctic preserve.

Investigating the possibility of setting up some kind of wilderness refuge in the Far North, George Collins (left), Starker Leopold and Fraser Darling prepared to board an early "all-terrain vehicle" for an exploratory trip in 1952.

your sorry bones up a slippery talus slope in order to picnic on a ridgetop that looked, three hours earlier, as if it were 20 minutes away. It's about shivering inside your tent on a snowy afternoon, writing up where you are and what you've been doing so that later, when you are warm and dry in your study at home, you will have these blood-stained, coffee-splotched, charcoal-smudged, snot-smeared notes to remind you what it was like to be in the Arctic Refuge.

Day One. *Boing, boing, boing.* "Eeeeeeek! Eeeeeeek! Eeeeeeeeeeeeeek!"

After Ross drops us here at Joe Creek, Sandy and I experience the same kind of rush that came over the Muries following their trip from Fort Yukon to Lobo Lake in 1961. "I will never forget how I felt," Olaus wrote, "looking over this northern landscape, after the plane had left and we were alone up here."

Olaus probably wrinkled up his nose at Mardy and said, "Gee!" Being somewhat more demonstrative (or less mature, whichever the case may be), the two of us hop around making strange noises like a couple of lunatics. Then, having gotten that out of our systems, we go to work.

We locate our tent near what I take to be the same willows Collins and Sumner camped next to. I called Collins just before we left. He is 93 now, recently widowed and living in a retirement community in Phoenix. He told me he envied us. "I think about Joe Creek every day of my life," he said. We can see why.

The valley extends east-west for about seven miles between the bends where Joe Creek enters from the north and exits to the south, heading for the Yukon border. We're smack in the middle of it, surrounded by mountains that already show a light dusting of snow.

Where the grizzly disappeared

Joe is not actually one creek but four or five shallow streams braiding their way through a gravel bed roughly a hundred yards across. The streams themselves run from several feet to 40 or 50 feet in width. There are two distinct drainages in the mountains behind us, to the north, and three in the mountains facing us on the south side of the creek. The grizzly we saw in the willows before we landed ran into the middle one of those three.

I am sitting on the ground in front of the tent beside a small driftwood fire. Sandy is wandering around down there near the mouth of that middle drainage, looking for pretty stones. We brought two canisters of pepper spray to use in case of bear attack. At the moment, both of them happen to be up here in the tent. It occurs to me as I watch my defenseless wife that, from this distance, she could easily be mistaken for a little animal. I can't help wondering if the bear is watching her, too.

Bon appétit!

Caribou swarm across pond on refuge's coastal plain, a principal calving ground for the teeming Porcupine herd.

The oil industry wants to start exploring in the area. Environmentalists say drilling would disturb caribou.

A gray wolf (left) pauses on its lonely trek across a brushy plain. A snowy owl (above) swoops down beside fuzzy chicks in its unconcealed nest on the tundra.

On second thought, maybe I'd better stroll down there and stand guard.

Day Three. I emerge from the tent into the frosty morning, stretch and squint. There, on the hillside—three black rats! Weird. I fetch the binoculars and discover that I am actually seeing three caribou about, what, a half-mile away. It's that distance thing again. It takes time to get used to it up here.

Taking the tundra in stride

This is my first look at caribou in the wild. At first, they're just ambling along, grazing as they go. Then they seem to become aware of us. They shift from a walk to a wary trot, disappear into a draw and reappear moments later, running. Big racks, white collars. Much larger than deer, and surprisingly graceful. They are covering a tremendous amount of ground very quickly. We know from our own hike yesterday how rough that terrain is, but they are gobbling it up. Unforgettable!

Later, back at camp, exhausted after an exhilarating trek, I am gathering firewood when Sandy announces that there is a "black fox" jumping up and down behind the willows on the other side of the creek. The binoculars expose another case of mistaken identity. It is a wolf, almost pitch black.

When Sandy first noticed the critter, it was nonchalantly loping up the creekbed in our direction. Then it stopped, looked toward us and began to creep closer. At that point, it had to jump above the willows in order to see us. What *we* see is this head popping up and down. Ridiculous. If Little Red Riding Hood had run into this character she would have died laughing.

Day Five. It is midafternoon and I am staring at a limestone mountain. The mountain is a mile or so away and its south side, the one I am studying, is exposed to the direct glare of the sun. You need illumination to appreciate what a geological wonderland this region is. On a cloudy day, you lose relief and the striking incongruities of light and shadow.

I am an itchy kind of guy. Not the type to sit and stare at anything. An action guy—go, go, go. But after you've been in this environment for a few days, you get over that nonsense. You realize there's nothing wrong with sitting and staring if what you're staring at is good. And everything up here is good. This mountain is good.

The most fantastic things are sticking out of it. There are pegs, pinnacles, teeth, inverted cones, tombstones, pillars, crags, turrets, minarets. This is what frost and water do to limestone; they erode it into these spectacular embellishments. In this light, their shadows are elongated and absurd. As the clouds come and go, so, too, do the shadows.

I have only to shift my gaze slightly to enjoy an entirely different perspective. This long view presents me with

a succession of shadow-and-light shows displayed on the receding mountainsides, one after the other. Each is different, and all are seen through a veil of mist rising from the creek and surrounding wetlands, and descending from the sky. Is this what artists call "chiaroscuro"? It has the effect here of transforming rock into silk.

This is the essence of the refuge—always changing yet always the same.

Day Seven. Bear time again. We just made camp at the foot of a mountain here on the west branch of the Sheenjek. This is, what, our fourth or fifth move in a week. It's beginning to get a little old, this nomadic life. Up tent, down tent. Unroll sleeping bags, roll sleeping bags. Blow up mattresses, deflate mattresses. I cut my fingertips the other day, and I'm having trouble with zippers and knots. I am going on in this vein, bitch, bitch, bitch, when I emerge from the tent and see them about 200 yards away.

These three are not galloping in headlong flight like the grizzlies we surprised the other day. True, they are skirting us, but they are taking their own sweet time about it. The cubs, if you can still call them that, are almost as large as Mama—2 or 3 years old, probably. In the binoculars, they look much too close and inexpressibly huge. The sunset burnishes their mustard-colored fur into something like the vivid red of the fireweed growing on the hillside behind them. As they plod into the shadows, however, they become browner, darker. We are talking big rear ends and massive heads here, but we are definitely not talking roly-poly.

When Mama picks up the pace, one of the cubs, Gallant, dutifully breaks into a trot to keep up; the other one, Goofus, lags behind. He acts like the hyperactive teenager he is, poking around, swatting, stopping to peer back at us and make faces. Is this thrilling? Yes. Does Goofus make me uneasy? Yes.

We continue watching them for a long time. Even at a distance of a quarter-mile or so, they remain conspicuous. And alert. When Sandy breaks a stick for the fire, all three instantly pause and look back. Sandy does not break any more sticks.

Once they have deposited themselves on a rock pile, we crank up our little gas stove, eat and turn in. It is disquieting to have them so close, and Don Ross inadvertently flew off with our pepper spray after bringing us here today. But we're too tired to worry about it.

In the night we hear noises. A search with the flashlight turns up nothing. This morning we discover that the food pack I had hidden in a nearby gully is missing.

The bears are still there. Two are lying down; Goofus appears to be doing calisthenics. They're certainly acting innocent. But even if they are not the culprits, what if word gets around that the two geezers in the blue tent are good for lunch?

We decide to break camp and move again. We have ample food in a second pack cached elsewhere, but we are running low on stove fuel.

Day Nine. We are packed and waiting for Ross to take us back to Fort Yukon.

The other afternoon we braved snow and ice to fly over the coastal plain. It is a strip of tundra about 30 miles wide and 75 miles long. From the air the whole thing appears to be marked off in polygons, the result of frost heaving; it looks like a big green waffle iron. It's also finely etched by thousands of meandering caribou trails. Sandwiched between the Beaufort Sea and the Sadlerochit Mountains, it is hauntingly beautiful.

I thought about it again early this morning when I heard the faint but unmistakable sound of an approaching helicopter. It was a big orange-and-white job. I tracked it with the binoculars as it passed high overhead, veered east and disappeared.

Clatter, clatter, clatter—there goes the neighborhood. It was true. The copter didn't leave a mark on the land, but it changed everything. It broke the spell. And it made us think. If the din and disruption of a single aircraft can do that, imagine what another Prudhoe would do to the coastal plain.

Worse things could happen. It wouldn't be the end of the world. It wouldn't be the end of the refuge. It would only be the end of the wilderness.

I look at it this way. It isn't every day you hop on a plane and travel to the far northeastern corner of Alaska. I may never see the Arctic Refuge again. But now that I have been there, I am quite sure that, like George Collins, I will think of it every day for the rest of my life. I would like to be able to think of it the way it is now.

Frost-tinged plants on the boreal-forest floor are a certain sign that another Arctic winter is on its way.

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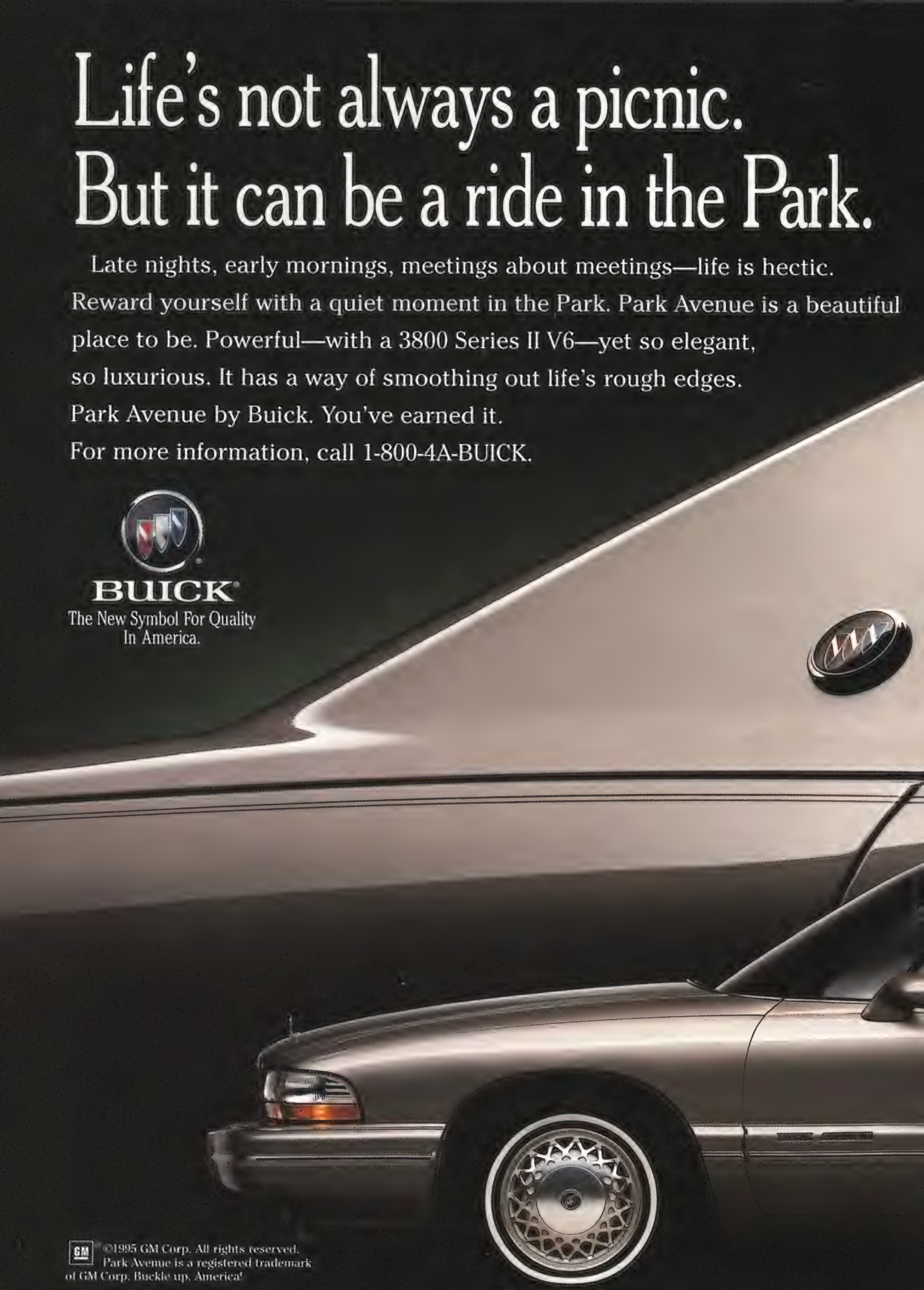

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USA

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By Bennett Schiff

The art treasures of China are on the road once more

For years they were shuttled from one hiding place to another to escape the Japanese and then the Communists—now they're coming here

Ko ware vase (13th-14th century) has crackled glaze. Opposite: the landscape *Deer among Red Maples* (10th-11th century) is by an anonymous northern artist.

When Emily Sano, director of the Asian Art Museum of San Francisco, first saw a Chinese masterpiece, a thousand-year-old landscape painting, she said, "I knew I was in the presence of God."

Now, beginning this month, Americans across the country will have an opportunity to see such a painting, along with some 440 other Chinese works of comparable distinction. "It's the greatest show of Chinese art in the West of all time," said Wen C. Fong, consultative chairman of the Metropolitan Museum of Art's Department of Asian Art. "It is not likely it will ever be seen outside Taiwan again."

The exhibition, "Splendors of Imperial China: Treasures from the National Palace Museum, Taipei," which includes paintings, bronzes, calligraphies, jades, carvings, lacquerware and decorative arts, opens at the Metropolitan Museum of Art on March 19 and continues through May 19. It then travels to the Art Institute of Chicago (June 29-August 25), the Asian Art Museum of San Francisco (October 14-December 8) and the National Gallery of Art, Washington, D.C. (January 27-April 6, 1997). The exhibition is supported in part by the Henry Luce Foundation and the Starr Foundation.

The National Palace Museum of Taipei, precariously situated on the bitterly contested island of Taiwan, holds one of the finest, if not the finest collection of Chinese art in existence. It is not the largest collection—that is in mainland China itself—but it is generally regarded by specialists to be selectively the best.

The incomparable significance of this collection is evident in the reverence that the Chinese people have always had for their art objects, which they regard as powerful and magical symbols of religion and authority. Indeed, the director of the National Palace Museum, Ch'in Hsiao-yi, has cabinet rank in the government of Taiwan, the only government in the world that equates the head of a museum with, say, a secretary of defense or the treasury.

How the collection got to this small island in the Western Pacific is an amazing tale in itself. Philippe de Montebello, head of the Metropolitan Museum, thinks the story of how tons of the most precious and irreplaceable art ended up on Taiwan is "one of the great romances of the century." The incredible journey lasted 16 years and covered thousands of miles across a land torn by two savage wars.

The story began in 1924 when the provisional Kuomintang government ordered the last Ching dynasty emperor, the hapless 18-year-old Henry P'u Yi—later to be installed by Japan as its puppet emperor in Manchuria—out of Peking's Imperial Palace. Along with him went an elaborate court retinue, some 2,000 eunuchs, and an art collection.

For years some of the emperor's most trusted advisers and courtiers had been selling off rare items from the

The National Palace Museum, Taipei, houses one of the finest Chinese art collections in the world today.

royal collection, replacing choice pieces, now and then, with counterfeits. In fact, in 1925, during one of China's many chaotic periods, a warlord offered J.P. Morgan, who he had heard was something of a collector, the entire imperial collection of art going back some 3,000 years, for $20 million. Morgan turned him down, but many of the finest acquisitions of Chinese art in the major museums of the world came about as a result of these raids on the dynastic holdings.

Finally, a government committee was formed to administer the collection. A museum was established, and the immense job of cataloguing was begun.

The story of that task and the eventual removal of the best of the collection to Taiwan is told in the Chinese book (as yet untranslated) *An Account of the Thirty Years of the Palace Museum* by Na Chih-liang. A world authority on jade, retired for many years now from the Taiwan museum staff, the 88-year-old Na lives in a modest cottage on the grounds of the museum. He was one of a group of students who were marched into the palace to begin a survey of what was there. "I was able to write very quickly," he recalled in his cottage, "and I was chosen for that skill and not at all for my knowledge of art."

He joined one of the teams of workers operating under strict surveillance. No one was permitted ever to be alone with any of the works of art. The uniforms they wore were without pockets. The cold was intense, and Na recalled, "Of course, there was no such thing as a ballpoint pen. We used brushes. The points of the brushes became very stiff from the cold, began to freeze, so we used our mouths to warm the brushes. And so, the old catalogs are not very clear today."

Under Sun Yat-sen, the Kuomintang, now firmly seat-

Map shows the collection's ten-year odyssey via truck, rail and ferry (left) to escape the Japanese and Communists. For safety, different routes were used.

ed as a government, had established the public museum, the first in Chinese history. It functioned for just three years before the Japanese invaded China in 1931. The flight began.

The job of packing the crates was carried out at a frenzied pace. The Japanese were only 150 miles from the city. To hide the movement, wooden carts hauled the crates through streets at night to the railway station. A living fence of soldiers guarded the route.

The destination was Nanking, by way of Chengchou, Hsuchou and P'uk'ou. The move took from February to June 1933. It required five trainloads, each with 39 sealed cars. Not everything in the palace collection was hauled away but what there was filled 19,557 boxes.

The decision to make Nanking the refuge had been precipitous. There was no adequate storage in that city, so most of the crates were arduously transferred to Shanghai. There they remained until 1936, when safe storage had been built in Nanking, then the national capital. Back they all went.

In 1937 the Japanese began to invade northern China, and on August 13 the battle of Shanghai broke out. With Nanking threatened, the precious objects were on the move again the following day.

For the next ten years, the art collection wandered back and forth across China, changing location each time disaster threatened. Split into three separate shipments for safety, the objects were ferried by rail and steamboat and hand-towed barges. They were trucked over primitive roads where mudslides and avalanches were ever-present dangers, and they were hauled on the backs of coolies. They were hidden in warehouses, squirreled away in caves and spirited out of temples just before the structures were blown to bits by Japanese bombs. Finally, at war's end, the objects were retrieved from their far-flung hiding places and came to rest again in Nanking.

But not for long. The war between Mao Tse-tung's Communists and Chiang Kai-shek's Nationalists was raging, and with the Communist forces apparently nearing final victory, the Nationalists decided to withdraw to the island of Taiwan, some 120 miles from the mainland—and to take with them as much of the magnificent collection as they could.

The selection was to represent the range of Chinese art history—extending over some 3,700 years—with the best examples of each discipline; in effect, the very essence of Chinese history. By February 1949 three shipments had been made to Taiwan. They formed the major portion of the National Palace Museum, with additions from the National Central Museum of Nanking.

In all, the collection contains more than 640,000 pieces, including 5,511 bronzes, 25,197 porcelains, 10,923 jades, 3,716 calligraphies, 5,243 paintings, 182,101 rare books, 386,440 documents of irreplaceable historical value and tens of thousands of other items, each of which had been selected as being among the finest and most representative of its order.

"I hope," said museum director Ch'in, "the American audience will realize what this collection went through in the difficult years in order to get here."

Despite the history of animosity between Taiwan and

Bennett Schiff, former Art Editor of SMITHSONIAN, *wrote most recently about the artists Piet Mondrian (June 1995) and Willem de Kooning (April 1994).*

the People's Republic of China, Ch'in hopes that the inheritance of art will increase cooperation between the two antagonistic governments. Already, a book covering the holdings in both principalities, *Treasures of Chinese Art*, has been jointly published, and the deputy director of Beijing's Palace Museum has accepted an invitation to lecture in Taiwan.

For Chinese of either political persuasion, ritual and symbolism are matters of intense importance. The opening of the National Palace Museum in Taipei, on November 12, 1965, also marked the 100th anniversary of the birth of Sun Yat-sen, the founding father of the Republic of China. The museum's formal name, in fact, is the Chung-shan or "Central Mountain," one of the names Sun Yat-sen was known by.

Backed up against a steep ridge, the museum is lodged in a bowl of viridian green, surrounded by peaked hills of the general shape you see in Sung dynasty painting. A tile-capped, powerful and sweeping portal wall, interspersed with five gateways, leads toward the museum, which stands like ancient Persia's Persepolis on a mammoth platform of stone. It is a buff-toned, four-story structure, its roof capped with green-tiled outcroppings that, to foreign eyes, immediately declare it unmistakably, classically, Chinese.

Great bronze caldrons and wine jars

The exhibition about to open here offers an insight into the essence of China's art, which is to say, of its civilization. The main divisions of the collection are the jades, porcelains and lacquerware and, held in highest esteem, the calligraphies, paintings and bronzes.

The bronzes are so impressive, have such majesty in the great caldrons and wine jars, and such presence in the smaller vessels, that it is easy to understand their significance. They were ceremonial symbols of spiritual and political forces that reflect the emphasis on ritual. Bronze in those days—we are speaking of the Shang (c. 1766-1122 B.C.) and the Chou (c. 1122-256 B.C.) dynasties—was a precious material. Reserved for offerings of wine and food to the spirits of deceased ancestors, the bronzes were arranged in hierarchical order, determined by the rank of the user.

In time—and the significance of this is by no means lost on the Chinese of today—the vessels became symbols of rank, evidence of the right to rule, affirmations of dynastic legitimacy.

There is hardly an object or shape in Chinese art that does not have within it more than the eye can see. A painting of bamboo, for example, is certainly pleasant enough, the brush delicate, the shading subtle, the color pleasing. But to the trained eye there is something more, something both within the painting and outside it. Bamboo was painted as long ago as the 13th century

Ornate bronze Yu wine container dates from mid-11th to early 10th century B.C. Bronze vessels became symbols of rank.

Portrait of Sung Jen-tsung, who became Sung emperor in A.D. 1023 at age 12, depicts a modest and humane leader.

Detail of an 85-foot-long silk hand scroll (c. 1550) shows an imperial procession containing 1,000 figures and 785 horses.

This elegant yellow jade carving of a duck (12th-15th century) is enhanced by the brown coloring on its head, neck and beak.

Bronze I water vessel for ritual offerings (9th-8th century B.C.) has animal handle, and legs in the form of human figures.

Jade brush holder of 18th century depicts scene in Yu Mountains grotto. At top is title, *Storing Books in Stone Chambers.*

Egrets and Hibiscus by Lu Chi (c. 1475-1503), on silk, reveals the artist's mastery of academic traditions.

to signify the inner personality of the artist, the bamboo representing the essence of the gentleman-scholar. The scholar, like the bending but resilient bamboo stalk, can adjust to the times, but he does not break; his morality is enduring. At least as early as the Yuan dynasty (A.D. 1277-1368) bamboo became the symbol for the ability to endure oppression and so it carries a political significance as well.

Chinese painting is, of course, grace and harmony, subtlety and radiance, and nature—birds and flowers, water, mountains, trees—and all of these elements are brought together in the magical and mysterious Northern Sung dynasty landscapes. The exhibition will contain six of these universal masterpieces, works so rare that they are never, even in their home museum, exhibited more than one at a time and then only once a year, so that another may be put out for viewing.

What predominates so overwhelmingly in these paintings is their spirituality. Hsieh Ho, well over a thousand years ago in the Six Dynasties period (A.D. 265-581), wrote a treatise, "Six Canons of Painting," that is still considered by experts to be fundamental to understanding Chinese classical painting. First, wrote Hsieh, the painting must have the breath of life, inspiration and vital form. Second, there is the fact of the brush, which means that paintings could be judged on the basis of the identity and character of the individual brushstroke, on the strength or weakness of a given line, on the individual expressiveness of the artist.

The same can be said of calligraphy; it is more than fine writing. Perhaps the least intelligible of all Asian art to the Westerner, it is in China "the supreme art form," according to Thomas Lawton, former director of the Smithsonian's Freer Gallery and now senior research scholar at the Sackler Gallery. The characters represent specific meanings or concepts, but the trained eye responds emotionally and esthetically to the calligraphy itself. It must be balanced. It must be rhythmic. It must contain spiritual force. The calligrapher must be a master of it all. "Calligraphy is always expressive," says the Met's Wen Fong. "Whatever else it expresses, it expresses its maker."

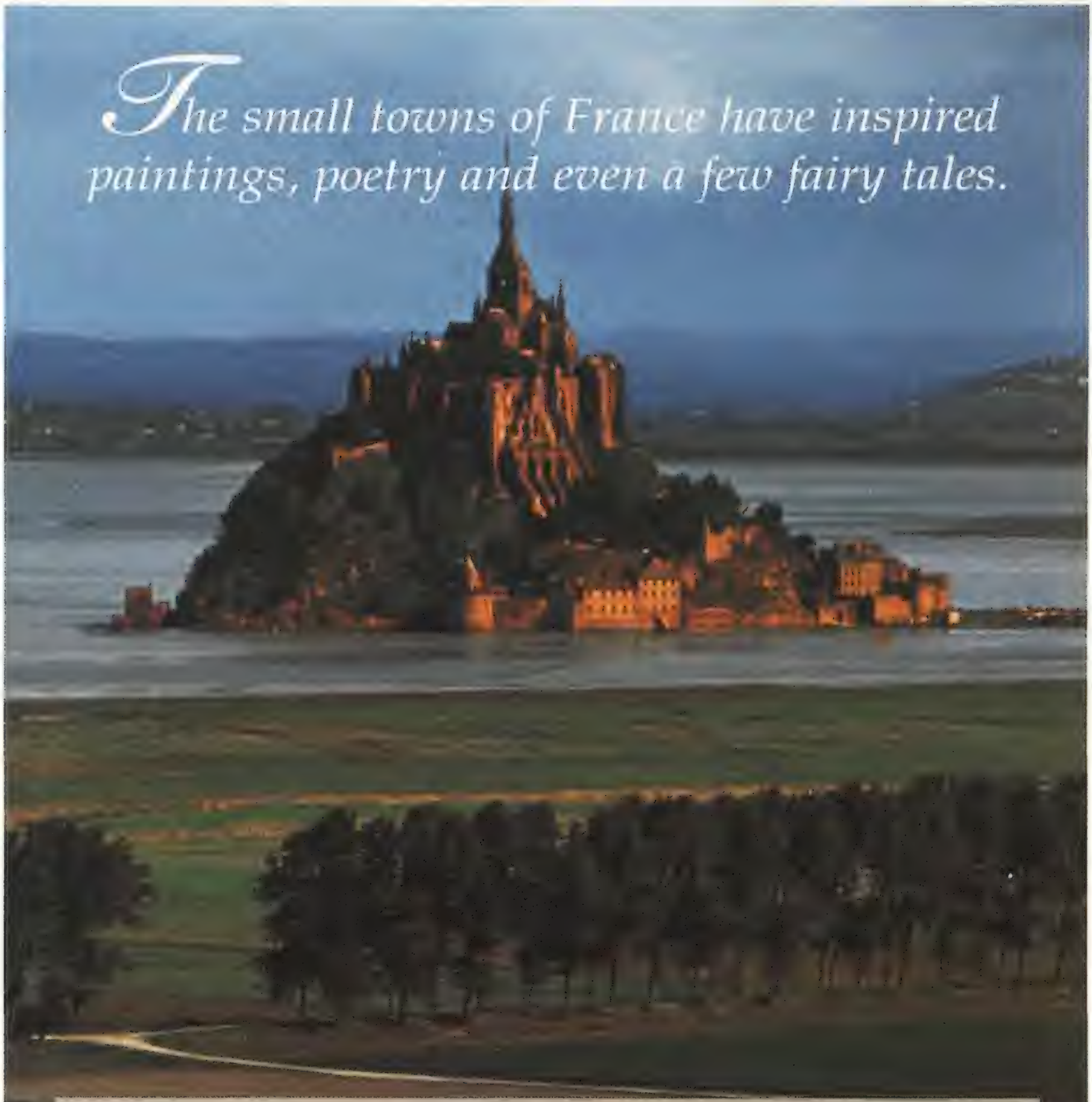
By the Eastern Chou period (772-256 B.C.) Chinese characters were seen as having esthetic values of their own. Zong Baihua, in *The Aesthetics of Chinese Calligraphy*, puts it this way: "Variations in density of composition, light and heavy strokes, slow or fast brushwork . . . It is like picking out notes from the myriad sounds of nature in musical or artistic creation, developing laws of combining those notes, and using variations in volume, pitch, rhythm, and melody to express images in nature and society and the feelings in one's heart."

When we think of jade, we envision something intricately carved, jewelry perhaps. It makes very nice necklaces. But to the Chinese, jade is more than a substance for trinkets. In early times it was used to make funerary objects. A jade cicada was put on the tongue of the deceased as a symbol of resurrection. A jade pig, a symbol of property, might be placed in either hand. In the form of a disk, jade is sometimes said to signify heaven. A jade piece enclosed within a square is thought to have represented Earth.

In time, jade became decorative. One object in the exhibition, a jade duck, is an example of harmony and grace and perfect proportion in a very small dimension. Jade ornaments attached to the clothing of the well-born reminded the wearer, when they clinked, that he was walking too fast for his station.

The National Palace collection of ceramics is dazzling too, being especially rich in the exquisite shapes, forms, finishes and colors of the most delicate porcelain.

Take Ju ware. It dates from the Northern Sung. It is, of all varieties of porcelain, the most rare. A form of



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celadon, its color ranges from blue to green, suffusing a palette that is limitless in the delicacies of its range. Only about 65 pieces of it are known to exist. It is doubtful that you could trade a modern skyscraper for a little piece of it, say a dish. The National Palace Museum has 23 pieces of this exquisite ware. It has sent three examples to the U.S. show.

Considering how these rare works of art are regarded by the Chinese, the place from which they come is as much a shrine as it is a museum. You could say that the museum takes its place among the various Buddhist temples in Taiwan.

And yet, it is not at all a hushed place. On one of its busy days, which seems to be every day, it is more like a shopping mall except that nothing here is for sale, and the quality of the objects is of a different order.

The building is full, vibrant, busy. Visitors from around the world fill the air with a multitude of languages. Infants, schoolchildren, families complete with grandparents, are out en masse, intensely enjoying themselves as they walk through their history.

In another museum nearby, the Taipei Fine Arts Museum—an imposing and spacious geometric structure of granite, glass and marble opened in 1983 to show contemporary art—a boy of about 7 was sprawled on the floor copying a nonobjective painting, an arrangement of simple forms of color in white space.

Why that one? he was asked. There wasn't even anything he could recognize in it.

He looked up impatiently and said, "Because it's beautiful," making it quite clear that Chinese art, old as it is, still has a clear path ahead.

Calligraphy and painting are the most esteemed forms of Chinese art. Bamboo symbolizes the inner personality of the artist, his resilience and morality. Calligraphy is thought to express spiritual force.

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By Edwin Kiester jr.

Giving money away wisely ought to be a piece of cake

It's harder than you think, but even more rewarding, as the Stocker family foundation shows in Lorain, Ohio, and points West

Stocker supports Girl Scouts (top) and a center that helps low-income women start their own businesses.

The temperature is in the mid-90s, and the humidity is worse, but Jane Norton's warm feelings as she drives through the old industrial towns and rich farm fields of Lorain County, Ohio, have nothing to do with the August weather.

"The Salvation Army . . ." Cheerful and soft-spoken, the executive director of the Stocker Foundation raises her voice over the drone of the Cherokee's air conditioner and gestures toward a building with a big red shield. "Ten years or so ago, they needed a new boiler system. It was important for such a valuable community organization to have a boiler that worked. So we provided the money. Twenty-two thousand dollars, I think it was. I'm sure nobody at the Salvation Army remembers that anymore. But it gives me a feeling of satisfaction every time I pass here, and I think, 'Well, maybe we helped a little bit.'"

Jane's Cherokee turns a corner, and she waves in the direction of another building. "That's Second Harvest, or the County Cupboard Food Bank, it was called then. We gave them $24,000 in start-up funds and bought their first walk-in freezer and food cooler. They've expanded a lot since. We certainly don't take credit for that, but it's nice to know we were able to nudge them along in the beginning."

Her face lights up as the car swings by the regional Girl Scout offices. "That reminds me of a grant that may qualify as our most unusual. We laugh about it. The Girl Scouts in Tucson couldn't open their camp in the mountains because of old pit latrines. We gave them funds for environmentally friendly chemical toilets. That's the kind of stuff that makes us sit back and smile."

Of course, she recalls, the climate has sometimes been decidedly cooler. When the local chapter of a professional society requested money to establish a technical library, the foundation declined. "We thought the members should contribute to the project themselves, instead of just seeking a grant," she says. "After all, they were the ones who would benefit." The project director

The foundation also helps (clockwise, from top left) the San Antonio Children's Museum; Oberlin experiment where elderly and students live together; Any Baby Can in San Antonio; Tucson's Native Seeds garden.

didn't see it that way. When Jane telephoned with their decision, there was a silence, then a sharp intake of breath—a sound Jane has become accustomed to when reporting bad news. "Well, I'm very, *very* disappointed," said the voice. The conversation ended abruptly.

As trustee, secretary-treasurer, executive director and staff of the $13-million, Lorain County-based foundation, Jane Norton has had plenty of conversations like that. Since its founding in 1979 on the estate of Jane's father, inventor-manufacturer Paul Stocker, the family foundation has given out 936 grants, totaling more than $7 million, much of it in a patchwork quilt of $1,000, $2,000 and $5,000 dollops. It has also agonizingly refused hundreds of requests. The money has paid not only for boilers, eco-privies and cold-storage lockers, but basketballs, programs for battered women, literacy programs and an artist-in-residence program that brings operatic performers into the Lorain County schools.

Photographs by Richard Howard

Three generations of family serve on the Stocker's Board of Trustees. Seated from left: Nancy Woodling, Mary Ann Dobras, Beth Stocker. Standing: Director Jane Norton, Anne Woodling, Ben Norton, Wendy Dobras.

Some contributions have been idiosyncratic. In the spring of 1994, Jane was moved by news reports of flood devastation in Northern California and decided that Stocker, 2,000 miles away and with no ties to the area, should help the victims. She quickly mobilized the support of her fellow trustees—her mother, two sisters and a niece. The floodwaters had scarcely receded when a $10,000 check was on its way.

According to the Foundation Center, an information clearinghouse based in New York City that compiles statistics on grant giving, there are approximately 37,500 foundations in America, classified as corporate foundations, community foundations, operating foundations and—last but by no means least—independent foundations, which include family foundations like Stocker and make up 88 percent of the total. They have an estimated total wealth of $189 billion and pass out $11 billion a year. A handful of the huge and famous independents, like the Ford and the Rockefeller foundations, are billion-dollar giants. But the overwhelming majority of American foundations are far smaller and less well known.

More than three-fourths of independent foundations have assets of $10 million or less; 72 percent have a nest egg under $1 million. In their low-key, small-stakes way, however, family foundations like Stocker play a significant role in the nation's economic, social and cultural life, especially in their home territory. In tough times, small foundations have become a major source of funding for all sorts of projects, especially extracurricular activities in cash-strapped schools.

To most of us, giving money away sounds like a pushover job, comparable, perhaps, to being an ice-cream vendor on a hot day in Chicago. After all, you'd certainly never lack for customers, since the world is full of worthy causes. As Merrimon Cuninggim, a longtime foundation president, writes in *Letters to a Foundation Trustee*, "One of the propositions which otherwise intelligent people find attractive is, 'Anybody can give away money.'" But Cuninggim adds: "Not to the same degree does it ever appear that just about anybody can run a college or direct a symphony or manage a hospital." Julius Rosenwald, the entrepreneurial genius behind Sears, Roebuck and founder of the Julius Rosenwald Fund, once declared: "It is almost always easier to make a million dollars honestly than to dispose of it wisely."

Amen, say those who actually write the checks. Anyone who has ever faced the first of the month with more creditors than cash can at least partly sympathize with the feeling. Demand for foundation largesse almost inevitably outstrips supply, so that any conscientious

The author has written for SMITHSONIAN *on such topics as the G.I. Bill, which sent millions of World War II veterans to school, and apprenticeships.*

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foundation trustee's decisions are always troubling.

"Oh, sure, it sounds easy," says Beth Stocker, the 87-year-old founding matriarch and president of the Stocker Foundation. "Five thousand here, ten thousand there. How wonderful! But we can't fund everything. Giving to one means depriving another. We recognize that we're touching real people with real lives. Sometimes we have to say no." In 1995, the Stocker Foundation received 120 grant requests adding up to $900,000; the trustees had roughly $533,000 to carve up.

The same "who's in, who's out" decisions plague all small foundations, and big ones, too. Moreover, while successful grantees may bubble with gratitude, losers may be less gracious. They are all sure of the justice of their cause and have put hours of time, energy and hope into drawing up their grant proposal. A few years ago, after a Northern California foundation rejected a grant request, its president was roused at home by placard-waving pickets protesting the board's refusal.

At Native Seeds, Harry Soto sorts varieties of beans to be sent to Native Americans in the Southwest.

To maintain its tax status, an independent foundation must donate at least 5 percent of its investment assets. Actually, says Deborah Brody, director of private foundation services at the Washington, D.C.-based Council on Foundations, most family foundations spend more than that—7 to 10 percent is the norm. Most of this money is directed to what are known in arcane bureaucratese as 501(c)(3)s. That is, tax-exempt nonprofit groups registered with the Internal Revenue Service.

In the world of small foundations, trustees meet or confer periodically to pass judgment on an accumulated pile of proposals. Sometimes, says Waldemar Nielsen, retired Ford Foundation official and author of *The Big Foundations*, "the trustees just sit down and write checks to the First Presbyterian Church and the old folks home and the Girl Scouts and the YMCA like they've always done, and then everyone gets up and goes home." At its allocation meetings, held three times a year, Stocker prefers a more demanding method. Thus it was that, one Saturday in August, the five family members who constituted the Stocker board sat down at the long table in a spartan Lorain County office to tackle the latest crop of proposals. Jane Norton and her mother, Beth Stocker, were joined by Jane's sisters, Nancy Woodling and Mary Ann Dobras, and niece Anne Woodling. They welcomed two board newcomers, Jane's son Ben and Mary Ann's daughter Wendy. Vigorous and very much part of the proceedings, Beth Stocker presided.

"I love it!" "No!" "Maybe"

Two weeks earlier, Jane had mailed "a *big* packet" of grant requests to trustees to be reviewed and evaluated before the meeting. Since the previous session, the foundation had received 65 inquiries, 37 of which had resulted in actual proposals. Jane had written a one-page summary of each request and backed it up with the grant seeker's original proposal plus supporting graphs and reports. A fringe of Post-its and scribbled notes on each stack—"I love it!" "No!" "Maybe"—testified that board members had done their homework.

A bit more than $200,000 was available. The requests totaled some $400,000. Stocker's unofficial guidelines try to keep 45 percent of the grant dollars in Lorain County—"That's where the money was earned," Beth Stocker explains, "so that's where it should be disbursed." Another 40 percent is distributed in southern Arizona, where Nancy Woodling and Mary Ann Dobras live. Fifteen percent goes to San Antonio and Bexar County, Texas, where Anne Woodling lives.

Stocker is "project-oriented." Rather than making a contribution that disappears into an organization's general operating fund, the foundation favors specific programs that, if possible, offer "some promise of solu-

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Toni Harless takes a break from a painting business she started after a Women's Development Center course.

Pete Moreno of Any Baby Can checks in with David Bairera, who has muscular dystrophy, and his mother.

tion." Seven areas are of special concern: education, arts, youth leadership and development, the socially and economically disadvantaged, persons with disabilities, community needs and women's issues.

Still, a few grants usually jump out of these carefully defined boxes just because they appeal to the trustees. "The reality is that almost every single grant cuts across categories," Mary Ann Dobras says. "I mean, is a grant to Planned Parenthood under 'women's issues,' 'health' or 'education'?" Stocker ostensibly has a hard-and-fast rule against putting money into scholarships. However, the foundation collaborated with a local university on scholarships in bilingual education for students who promised to return to teach in Lorain County, which has a large Puerto Rican population. "We try to stay flexible," Beth Stocker smiles.

With a watch limiting each proposal to ten minutes' discussion and a running tally of amounts disbursed—"We don't want to run out of money before we reach the 'N's," Mary Ann Dobras explains—the trustees began wading through the proposals. Jane started with the Lorain County requests, introducing them alphabetically. The Arthritis Foundation, Northeast Ohio chapter, came first. The organization had requested $11,531 for Joint Efforts, a program of exercise for nursing home and adult day-care residents.

Stocker had previously funded the Arthritis Foundation, and the trustees were familiar with its work. After only a brief discussion, the full grant was approved. Next, the Catalina Boy Scout Council, which wanted support for bilingual publications to increase membership among the Hispanic population. The trustees approved $1,500. Jane moved on to the Center for Leadership in Education, which eventually got two grants of $8,500 and $8,800 each, the Child Care Resource Center ($6,000, matching an existing community grant) and the Cleveland, Ohio, Lecture Series, which received $1,250 to bring Lorain County students to town hall lectures by prominent Americans such as Colin Powell.

Challenge grants and brisk discussions

Some requests were granted but trimmed, some rejected outright. Some had the funding terms changed. In 1994, for example, instead of receiving its requested $10,000, the Oberlin Historical and Improvement Organization, known as O.H.I.O., got half that as a "challenge grant." O.H.I.O. would receive the money if it raised a matching amount from other sources. Sometimes discussion was brisk. The Brewster Center of Tucson needed $15,000 to help women at the center's battered women's shelter regain normal lives. "Does everybody like this?" Jane asked. Everyone answered "Yes!" And that was it. A school asked for funds to buy video equipment, which it had been borrowing. It was

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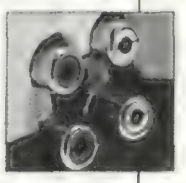

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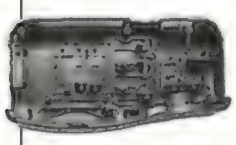

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Lissy Gulick, a singer and music mentor from the Cleveland Opera, hams it up a bit for an audience of teachers in a Stocker-aided program that brings professional musicians into regular contact with schools.

not something the school needed every day, the trustees concluded. The school could go right on borrowing.

Several of the trustees had arrived with definite opinions about specific proposals. Nancy Woodling had written "No!" on several requests. But when "I heard my sisters' comments and listened to new information Jane had received, I changed my mind," she recalls.

By 5:45 P.M., having as usual passed their self-imposed 5 o'clock deadline with only a break to dash across the street for a deli sandwich, the board had approved 34 of the 37 applications fully or partially, committing a total of $211,792. The largest grant, $17,000, went to the Stocker Humanities and Fine Arts Center of Lorain County Community College, named for Paul Stocker, to support performance, film and visual arts programming. The smallest, $500, was awarded to El Centro de Servicios Sociales to match a shortfall in state funding for its Family Violence Prevention Project. The final list included $6,086 to the Lorain County Sheriff's Office for a mobile traffic light and $5,000 to the Elyria Rotary Club for an infant/toddler immunization program.

For many small foundations—where, in Deborah Brody's words, an allocations meeting is "five people getting together over a cup of coffee"—Stocker's structured agenda, typed minutes and clockwatching seems exceedingly formal. By standards of philanthropy's biggies, however, Stocker's procedures are casual to the point of being quaint. The Ford Foundation—which receives 35,000 applications a year but gives out only 2,000 grants—funnels requests through a battalion of 80 "program officers," each assigned to one of seven program areas. The program officer checks the request to make sure it fits foundation guidelines. If the request is not rejected, the officer then works with the applicant to develop a draft proposal. The program officer, says Michael Seltzer of the Governance and Public Policy section, may discuss it with a department director in a "creative conversation" to determine how the proposal might be strengthened or revised—or rejected. The proposal wends its way through legal and budget reviews before presentation to the foundation president at a program officers meeting for approval or further change. This process takes about four to five months. Though "in an emergency," Seltzer says, "we can turn a grant around overnight."

The Mission San Xavier Del Bac near Tucson, a Spanish colonial mission that once received a small Stocker grant, recently requested a grant from the Getty Foundation for its $2 million-plus restoration project. Before reviewing the request itself, Getty gave the mission $14,000. The stipulation was that the Getty money should be matched by an equal amount raised elsewhere, and the $28,000 spent for engineering drawings, historical research, artistic evaluation, photographs and documents in support of the proposal. When that mountain of documentation was submitted, Getty would review it all and say yea or nay to the full request.

Contrast that bureaucratic approach with the Albert Kunstadter Family Foundation of New York, whose informal, user-friendly methods are widely admired by fellow foundation officials. With more than $3 million in assets and annual grants of about $300,000, the foundation funds international projects in Africa, Asia and Latin America. President John Kunstadter or his wife,

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Geraldine, the foundation's chairman, visits every applicant, paying travel expenses out of their own pocket, then describing their impressions verbally to trustees.

Sometimes, too, grants originate within the large foundations themselves, where officers may identify what they consider a pressing societal problem and then seek grantees to tackle it. Such "proactive" grants are rare in the small-foundation world. "We simply don't have the staff," Beth Stocker says. Occasionally, though, the foundation takes the initiative. When a San Antonio group announced plans to establish the city's first children's museum, trustee Anne Woodling, mother of two, called immediately, suggesting the museum submit a grant request. Stocker eventually approved a grant of $14,000—a small amount in the project's eventual seven-figure budget, but a significant one, according to Kaye Lenox, the group's president: "They were among the first to show they believed in us."

"Damned if I'd give him a nickel"

There is also a lot more room for personal quirkiness in small-foundation giving. The director of one foundation recalls presenting a proposal for a cause that he thought "was a sure thing." But when he brought the idea before the foundation board, one trustee jabbed his finger at a name on the proposal. "That guy defaulted on his bar bill at the country club," he said. "Damned if I'd give him a nickel." For some small foundations, the word "family" means peace, harmony and shared values. For others, it means a bickering group of relatives separated by age, geography and outlook. A few years ago, in a case that sent shivers down the spines of foundation officials, the right of the president of the F.M. Kirby Foundation in Morristown, New Jersey, to fire three siblings as directors, and replace them with his wife and four children, was upheld. "Family dynamics" seminars are well attended at conferences given by the Council on Foundations.

Some foundations outlive their original purpose, but the terms are hard to change. A landmark case was the Buck Trust, whose $12 million under the original terms were to be spent for the benefit of the poor in Marin County, California. Meanwhile Marin grew into the second-richest county in the United States. A lawsuit to overturn the stipulation ended in a compromise, but the trust's terms were not changed.

Many foundations have special themes. The Lawrence Welk Foundation, founded by the late orchestra leader in 1960, concentrates on families in inner-city Los Angeles. The L.J. and Mary C. Skaggs Foundation of Oakland, California, focuses on American and British history. A recent project: exhibits at battle sites associated with Bonnie Prince Charlie's 1745 Scottish uprising.

Like many innovations in American life, foundations began with Benjamin Franklin, who set one up in 1791 for loans to "young married artificers of good character." The Peabody Education Fund came along after the Civil War to provide educational opportunities for Southern blacks, and during World War I, Andrew Carnegie and John D. Rockefeller established foundations to distribute their enormous wealth. But the big growth of foundations came after World War II. Since 1980, some 13,000 foundations have been established.

C. Paul Stocker was an Ohio farm boy who earned an electrical-engineering degree while waiting tables at Ohio University. Out of a job during the Depression, he began working on switching devices for the telephone industry. In 1936, he cofounded Lorain Products, and business boomed. By the time Stocker sold out to Reliance Electric in 1973, the company had 1,500 employees, several plants and revenues in the millions.

"He was a sucker for a sob story," Jane Norton says of her father, who gave generously to the community. He liked projects that helped people to help themselves, she says. When Stocker died in 1978, his widow wanted to continue that tradition. "I had heard of family foundations, but we were certainly not the Carnegies or the Rockefellers," recalls Beth Stocker. "I wasn't sure what to do." After getting advice from the Cleveland Foundation, the Gund Foundation and others, she announced to her three daughters that they were establishing a foundation. Jane, the only daughter still living in Lorain, was asked to serve as director.

In the first year, exactly one grant

The four women quickly learned that giving out foundation grants wasn't a bit like making contributions at the office. There were IRS regulations to cope with, bylaws to draw up, reports to file, requests to process, investment advice to listen to, papers to sign, agreements to draft, checks to write. The first year, the foundation made exactly one grant. Lorain County Community College had named the Stocker Humanities and Fine Arts Center for Paul Stocker, who had spearheaded the campaign to build it with a large contribution. The center was ready to open, but the college had no money for a dedication ceremony. The foundation came through with $18,000 to bring in the Cleveland Orchestra.

With Mary Ann Dobras and Nancy Woodling in Tucson, Anne Woodling in Texas and five of eight Stocker grandchildren in the Southwest, the trustees extended their philanthropic territory. At the August 1995 meeting, grantees in Arizona received $63,000 and grantees in San Antonio, $25,000. With new trustees in other locations, the Stocker reach may extend farther.

The impact of small grants goes well beyond dollars and cents. "It doesn't hurt to water the flowers," says Waldemar Nielsen. Take the Jeanne Beattie Butts House

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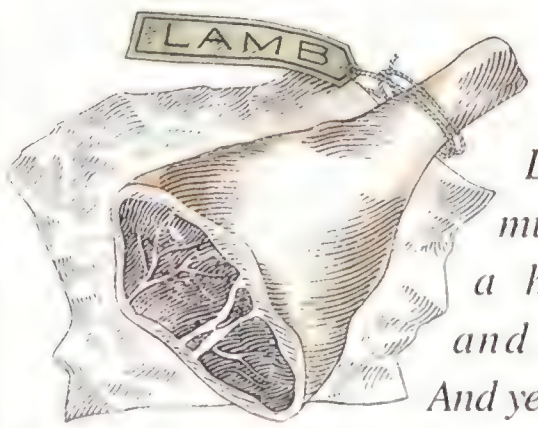

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Helping restore Mission San Xavier near Tucson, Sonny Morales boils cactus so juice can be used in stucco.

on the fringe of the Oberlin College campus. The 90-year-old Mrs. Butts, widow of an Oberlin faculty member, thought that college students and the "frail elderly" could learn from each other by living under one roof. Stocker gave the Neighborhood House Association $15,000 in start-up money. The grant was small change in the eventual $203,000 budget, yet it went a long way. "We went to TRW," says David Clark, a leading fundraiser for the project, naming a large corporate foundation in the area. "And the officer said, 'Have you received any other grants?' I said, 'The Stocker Foundation.' He said, 'That's good enough for me,' and practically wrote a check on the spot. It was like having the Good Housekeeping Seal of Approval."

Confronted by an alarming escalation of diabetes among Native Americans, Native Seeds/Search of Tucson launched a campaign to educate tribal members about the value of their traditional diet. Stocker gave $7,500 to print educational materials. Then Native Seeds got much more from other sources for an expanded program. "Without Stocker's seed money," says executive director Angelo Joaquin jr., "we would never have received the bigger grant."

In the foundation world, nobody simply signs a check and forgets it. Customarily, a grantor drops in on a would-be grantee beforehand to see how the money might be spent and, if a grant is made, returns for another look to see that it is being spent successfully. A few months ago, Jane Norton and Mary Ann Dobras found themselves 30 feet in the air, tremulously perched on a scaffold above the main altar at the Mission San Xavier near Tucson. A conservation crew was removing layers of varnish and accumulated dirt overlaid on the original *fresco secco* murals, which date back to the 1790s. Stocker had given a mere $5,000 to the six-year project, but the money arrived at a fortuitous moment. The project raises funds year by year; the Stocker grant came just in time to continue the upper altar work.

Back in Ohio, Jane's site visits took her to the Oberlin Historical and Improvement Organization, whose $5,000 challenge grant had been quickly matched by a single donation from an 80-year-old local woman who had never donated to O.H.I.O. before. There, Jane settled into a Victorian armchair while student intern Morag Boyd, cross-legged on the carpet, tapped on a laptop computer to catalogue the gowns, chairs, books, newspapers, old chemistry lab equipment and kitchen utensils that have been piling up for 40 years. Boyd's salary, as well as the computer, were paid for from the Stocker grant. Afterward, passing the Habitat for Humanity house where an all-woman construction crew was building a three-bedroom dwelling partially funded by Stocker, Jane went on to the Women's Development Center (WDC) in an old Elyria school building. Stocker had given the center $12,000 over two years to train low-income women to establish and operate their own small businesses. Toni Harless, a program graduate with her own sign-painting enterprise, explained that her training had enabled her to borrow $17,000 for computerized, state-of-the-art sign-painting equipment. And had that made a difference? Jane asked. "Oh, boy," Harless said. "Like having another employee."

Ruefully, WDC director Tracie Haynes explained how the grant came about. She had sent a request to Stocker and received a phone call from Jane. "Tracie!" she said. "Is this figure correct? Look at your cost per participant! You could put a woman through a four-year college for that!" "She was right," Haynes admitted. "We had lumped everything in—our salaries, our furnishings, all our hopes and dreams." She pared the request to the amount needed for the program and got the grant, which, after Jane's visit, was renewed for another year.

"We always try to ask gentle questions," Jane says. "I don't have a form to fill out or a list of questions to ask, and I don't take notes. We just want to be sure up front that the project fills a need, that they have clear objectives in mind, that their budget is realistic and that the project can survive without the grant. We don't make grants to see people fail." Because new causes keep coming up, Stocker generally limits grants for a single project to three consecutive years, a policy that sometimes

dismays grantees who expect funds to keep coming, year after year. When Stocker routinely ended support for a community college project after three years, the director appealed, "But this project is critical to the college operation!" "If that's true," Jane replied, "you should include it in your operating budget." They did.

Another part of the small-foundation role is to serve as a catalyst, connecting grant seekers with other community services to make dollars go farther. The local Easter Seals chapter wanted funds for a van equipped for the disabled. Jane brought them together with the Lorain County Transit Authority. The request was withdrawn. Stocker later funded an Easter Seal respite service for families of the mentally and physically ill.

Foundations have become a growth industry. More than 5,000 professionals now toil in the foundation vineyards. Indiana University offers a major in foundation administration. Community colleges teach courses in writing grant proposals. *The Foundation Directory* is six inches thick and now on-line, with lists of potential grant givers broken down by geography, interests and amounts. Not all of these changes sit well with foundation people. "The proposals we get are certainly more polished," Jane Norton says. "But we try to tell people, 'Write from the heart. We can always fill in the details later.'" "Professionals don't always have the same devotion to a foundation's ideals and goals that family members have," adds another foundation executive. "After all, the foundation wasn't founded by *their* grandfather."

Richard Magat was a longtime Ford Foundation official who later headed the Edward W. Hazen Foundation in New York, aimed at education and youth development. One day, he received a request on a crumpled, ink-stained sheet of paper; he promptly tossed it in the wastebasket. "Then I plucked it out again and found it was a wonderful idea! Some Hispanic kids in a parochial school were going to teach Spanish to their English-speaking teachers. All they needed was $500, which we gave them, and the idea was later copied in some public high schools. But with its messiness and misspellings, it might easily have been overlooked."

When you ask Jane Norton which of the 936 Stocker grants the small foundation is proudest of, she demurs. "That's like asking 'Which child do you love most?'"

An early grant from Stocker helped the San Xavier restoration project get much larger sums from bigger donors. Fixing up the 18th-century building will probably take six years and cost more than $2 million.

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By Fergus M. Bordewich

How to succeed in business: follow the Choctaws' lead

Within a generation, the rural Mississippi tribe has created thousands of jobs and transformed itself into an economic dynamo

Philadelphia, Mississippi, is the kind of place that seemed to survive more from habit than reason after the timber economy that was its mainstay petered out in the 1950s. There is a scruffy, frayed-at-the-edges look to the empty shop fronts and the discount stores where more vibrant businesses used to be, but by the standards of rural Mississippi, Philadelphia counts itself lucky. "Kosciusko and Louisville, they have to wait to buy a tractor or, sometimes, even to meet their payrolls," boasts the mayor, an amiable former postman by the name of Harlan Majors. "And they don't have a fire department worth a hoot. I have 16 full-time firemen."

Philadelphia's trump, the thing that those other towns will never have, is Indians. "Our best industry by far is the Choctaw Nation," Majors says. "They're our expansion and upkeep. They employ not only their own people, but ours too. It has never been as good as it is now. Our economy depends on them. If the tribe went bankrupt, we'd go into a depression."

For generations the Choctaws were a virtual textbook example of the futility of reservation life. Over the last quarter-century, however, the 8,000-member tribe has defied even its own modest expectations by transforming itself from a stagnant welfare culture into an economic dynamo, and one of the largest employers in Mississippi. Choctaw factories assemble wire harnesses for Ford and Navistar, telephones for AT&T, and audio speakers for Chrysler, Harley-Davidson and Boeing. The tribe's greeting card plant hand-finishes 83 million cards each year. Since 1991, the tribe has operated one of the largest printing plants for direct-mail advertising in the South. Sales from the tribe's industries have increased to more than $100 million annually from less than $1 million in 1979. As recently as 15 years ago, 80 percent of the tribe was unemployed; now, having achieved full employment for its members, nearly half the tribe's employees are white or black Mississippians. Says William Richardson, the tribe's economic development director, "We're running out of Indians."

The quality of life for the great majority of Choctaws has measurably improved. The average income of a family of four is about $22,000 per year, a sevenfold increase since 1980. Brick ranch houses have largely supplanted the sagging government-built bungalows amid the jungle of kudzu-shrouded oaks and pines that forms the heart of the Choctaws' 22,000-acre reservation. The Choctaw Health Center is among the best clinics in Mississippi, while teachers' salaries at the tribal elementary schools are 25 percent higher than at public schools in neighboring, non-Indian towns. "They're willing to buy the best," says a non-Indian teacher who formerly taught in Philadelphia. The tribal television station, the primary local channel for the region, broadcasts an eclectic daily menu that includes thrice-daily newscasts and Choctaw-language public service shows on such diverse topics as home-financing and microwave cooking.

The Choctaws are also a national leader in transferring the administration of federal programs from the Bureau of Indian Affairs (BIA) to the tribes. Virtually everything once carried out by the bureau—law enforcement, schooling, health care, social services, forestry, credit and finance—is now performed by Choctaw tribal bureaucrats. "We're pretty well gone," says Robert Benn, a courtly Choctaw who was the BIA's local superintendent until his recent retirement. His sepulchral office was one of the last still occupied in the bureau's redbrick headquarters in Philadelphia. "We've seen our heyday. The tribe is doing an exemplary job. They're a more professional outfit than we ever were."

Throughout the sprawling archipelago of reservations that makes up modern Indian country, tribes like the Choctaws are demolishing the worn-out stereotype of Indians as permanent losers and victims, and effectively killing, perhaps with finality, what historian Robert J. Berkhofer jr. aptly termed the "white man's Indian," the mythologized figure whose image, whether confected by racism or romance, has obscured the complex realities of real Native Americans, from *The Last of the Mohicans* to *Dances With Wolves*. For the first time in

The face of full employment: Choctaw enterprises, such as this car-wiring assembly plant, provide a good living for the tribe—and for neighboring workers too.

Photographs by Ed Kashi

The driving force behind the Choctaw's success story is their tireless and visionary chief, Phillip Martin.

generations, Indian tribes are beginning to shape their own destinies largely beyond the control of whites: revitalizing tribal governments, creating modern economies, reinventing Indian education, resuscitating traditional religions and collectively remaking the relationship between the United States and the more than 300 federally recognized tribes.

To be sure, in terms of overall statistics, Indian country continues to present a formidable landscape of poverty and social pathologies. On some reservations, unemployment surpasses 80 percent. Rates of alcoholism commonly range higher than 50 percent. Indians are twice as likely as other Americans to be murdered or to commit suicide, and five times more likely to die from cirrhosis of the liver. In spite of increased access to education, 50 percent of Indian young people drop out of high school. There is no cure-all for these problems, but for the first time since the closing of the frontier, responsibility for finding solutions rests increasingly in Indian hands.

Without viable tribal economies, however, self-determination is likely to remain little more than a pipe dream. A few Indian communities have reaped astonishing profits from legalized tribal gambling, which has grown into a $6 billion industry, accounting for about 2 percent of the $330 billion that Americans legally bet each year. By 1994, more than 160 tribes were operating some form of gambling activity, including 40 full-fledged casinos, in 20 states. The tiny Mashantucket Pequot Tribe, whose Connecticut casino grosses about $800 million annually, half again as much as Donald Trump's Taj Mahal, has repurchased tribal land and provided scholarships and medical coverage for members. The tribe has also contributed $10 million to the Smithsonian's National Museum of the American Indian.

Tribal "gaming," as it is rather delicately known, is not a panacea, however. Although rumors of mob involvement have been largely disproved, some tribes have squandered their earnings. Moreover, it is likely that gambling will taper off as an important source of tribal revenue by the end of the decade, as states grant gambling licenses to other groups.

Other tribes have been blessed with abundant natural resources, which they are now able to exploit in their own interest for the first time. Between 50 percent and 80 percent of all the uranium, between 5 percent and 10 percent of all the oil and gas reserves, and 30 percent of all the coal in the United States lie on Indian lands. Many tribes own rights to water whose value is dramatically increasing. More than 90 tribes have land that is densely forested, while millions of acres of leased tribal grassland provide pasturage for ranchers, and millions of acres more are leased to farmers.

Today, the Navajos and the Jicarillas of Arizona, among others, operate their own tribal oil and gas commissions to regulate production on their lands. The Southern Ute tribe of Colorado has set up its own oil production firm. One of the most innovative tribes, the Confederated Tribes of Warm Springs, in Oregon, operates three commercial hydroelectric dams and an extensive forestry industry, as well as a textile plant that has produced sportswear for Nike and Jantzen and beadwork for export to Europe, a luxury vacation lodge, and a factory that recently began manufacturing fireproof doors from diatomaceous earth—or fossilized sea creatures.

However, the experience of the Mississippi Choctaws has made clear that even the most poorly endowed tribes, with able and determined tribal leadership, a pragmatic willingness to cooperate with non-Indians, some federal support and the ability to raise capital, can hope to remake themselves into viable communities able to compete in the modern American economy.

The origin of the Choctaws is mysterious. Some say that they arose pristine from the earth at Nanih Waiya, the Mother Mound of the Choctaws, a man-made hill north of the modern reservation, in Winston County. "After coming forth from the mound, the freshly made Choctaws were very wet and moist, and the Great Spirit stacked them along the rampart, as on a clothesline, so that the sun could dry them," as one story has it.

Throughout documented times, the Choctaws were mainly an agricultural people, raising corn, beans,

This article has been adapted from Fergus M. Bordewich's book Killing the White Man's Indian: Reinventing Native Americans at the End of the Twentieth Century, *just published by Doubleday.*

A nurse-practitioner examines a newborn at Choctaw Health Center, among the best clinics in the state.

An aide introduces a history lesson to first-graders; Choctaw schools offer top salaries to attract teachers.

pumpkins and melons in small plots. However, exhibiting an instinct for business that was probably far more prevalent among Native Americans than history records, they raised more corn and beans than they needed for their own use and sold the surplus to their neighbors. Like their neighbors and sometime enemies, the Cherokees, Chickasaws, Crees and Seminoles, the Choctaws gradually adopted European consumer goods, styles of agriculture and schooling, as well as less-savory practices, such as the exploitation of African slaves. By the early 19th century the Choctaws and these neighboring tribes became known collectively as the "Five Civilized Tribes" of the Southeast.

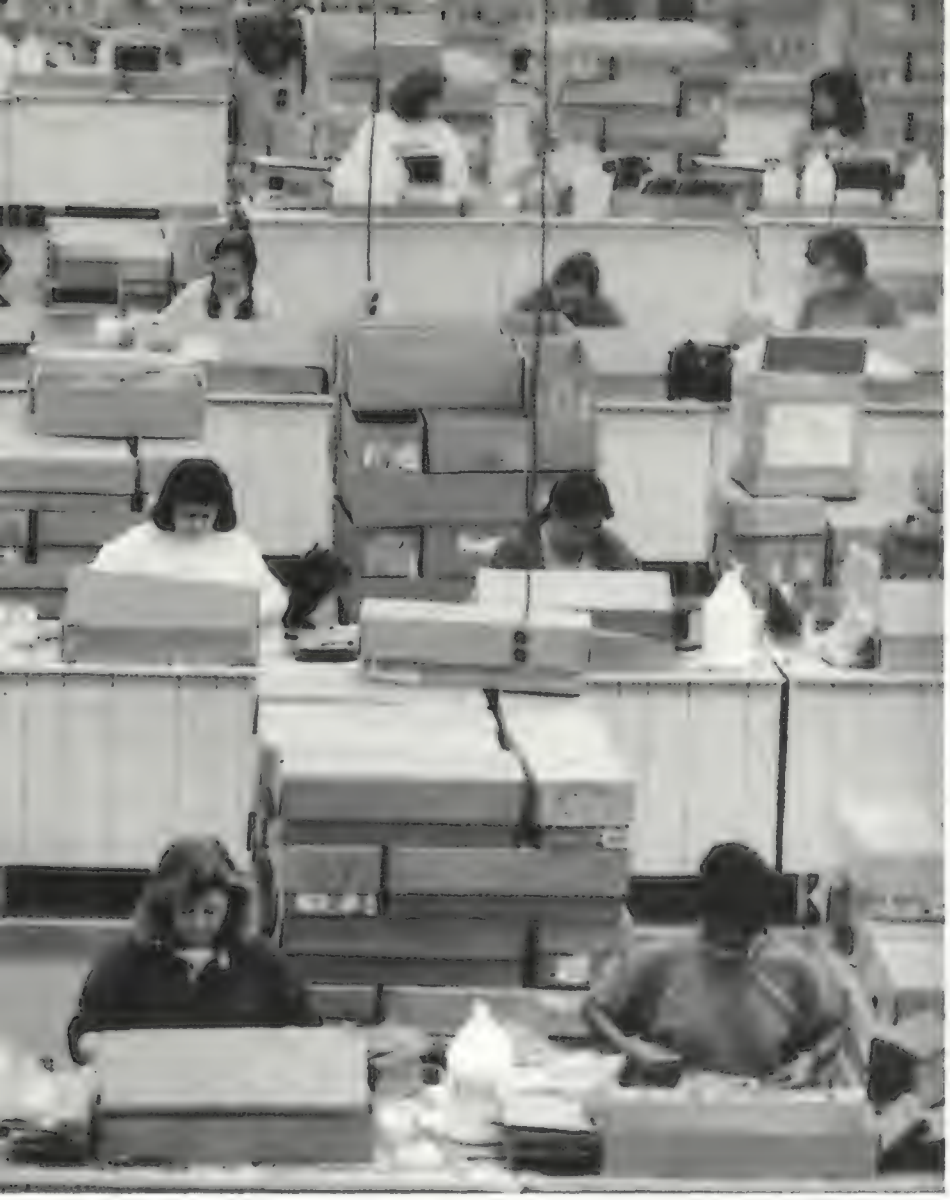
However, the relentless pressure of settlement steadily whittled away at the Choctaws' lands until, in 1830, in the poignantly named Treaty of Dancing Rabbit Creek, the tribe reluctantly relinquished what remained of its land in the East, most members agreeing to remove themselves to the Indian Territories, where their descendants still inhabit the Choctaw Nation of Oklahoma.

Originally, about one-third of Mississippi's Neshoba County was allotted to those Choctaws who chose to remain in the East. By mid-century, however, virtually all of it had passed out of Choctaw hands, sometimes legally, but often through fraud and extortion. Virtually without exception, the Choctaws were reduced to an impoverished life of sharecropping, living scattered among the forests of oak and pine. In time, their numbers were swelled by others who drifted back from the Indian Territories, disillusioned by the anarchy of tribal politics there and the difficulties of life on the frontier.

Ironically, the tripartite racial segregation that deepened as the 19th century progressed only strengthened the Choctaws in their traditions, language and determination to be Indian in a part of America where, for all intents and purposes, Indians had simply ceased to exist. Rather than send their children to schools with blacks, the Choctaws refused to send them to school at all. In 1918, when the federal government winkled out enough land from private owners to establish the present-day Choctaw reservation, nearly 90 percent of the tribe were full-bloods. Most spoke no English at all.

The story of the Choctaw revival is inseparable from that of Phillip Martin, the remarkable chief who has guided the tribe's development for most of the past 30 years. Martin is a physically unimposing man, short and thick-bodied, with small, opaque eyes and thinning hair that he likes to wear slicked back over his forehead. Beneath a grits-and-eggs plainness of manner, he combines acute political instincts with unflagging tenacity and a devotion to the destiny of his people. "He's like a bulldog at the postman—he just won't go away," says Lester Dalme, a former General Motors executive who has managed the tribe's flagship plant, Chahta Enterprise, since 1980. "At the same time, he'll give you the shirt off his back whether you appreciate it or not. He truly loves his people. He can't stand even one of his enemies to be without a job."

By all rights, Martin's fate should have been as gloomy as that of any Choctaw born in the Mississippi of 1926. "Everybody was poor in those days. The Choctaws were a bit worse," he recalls. As a boy, he cut pulpwood, herded cows and chopped cotton for 50 cents per 100 pounds. In those days, Choctaw homes had no windows, electricity or running water. Alcoholism and tuberculo-



Choctaw ventures range from greeting card production (workers, left, are engaged in hand-finishing tasks) to car-component manufacture. At wiring assembly plant (above) CEO Sam Schisler meets with four supervisors.

sis were endemic. Few Choctaws had traveled outside Neshoba County, and many had never even been to Philadelphia, only seven miles away. The etiquette of racial segregation was finely modulated. Although Choctaws were not expected to address whites as "sir" and "ma'am" or to step off the sidewalk when whites passed, they were required to sit with blacks in movie houses and restaurants. "But we never had enough money to eat in a restaurant anyway," Martin says, with irony, in his porridge-thick drawl.

Martin earned a high school diploma, rare among Choctaws of that time, at the BIA boarding school in Cherokee, North Carolina. His first experience of the larger world came in the Air Force at the end of World War II. Arriving in Europe in 1946, he was stunned by the sight of starving French and Germans foraging in garbage cans for food. White people, he realized for the first time, could be as helpless as Indians.

At the same time, he was profoundly impressed by their refusal to behave like defeated people and by their determination to rebuild their lives and nations from the wreckage of war. He wondered, if Europeans could lift themselves back up out of poverty, why couldn't the Choctaws? When he returned to Mississippi, he quickly learned that no one was willing to hire an Indian. Even on the reservation, the only jobs open to Indians were as maintenance workers for the BIA, and they were already filled. Martin recalls, "I saw that whoever had the jobs had the control, and I thought, if we want jobs here we're going to have to create them ourselves."

He eventually found work as a clerk at the Naval Air Station in Meridian. He began to take an interest in tribal affairs, and in 1962 he became chairman of the Tribal Council at a salary of $2.50 per hour. In keeping with the paternalistic style of the era, the BIA superintendent presided over the council's meetings. He also decided when tribal officials would travel to Washington and chaperoned their visits there, as Indian agents had since the early 19th century. Says Martin, "I finally said to myself, 'I've been all over the world. I guess I know how to go to Washington and back. From now on, we don't need the superintendent.' So after that we just up and went." Martin became a fixture in the Interior Department and the halls of Congress, buttonholing agency heads and begging for money to replace obsolescent schools and decrepit homes, and to pave the reservation's corrugated red-dirt roads.

The tribe's first experience managing money came during the War on Poverty in the late 1960s, when the Office of Economic Opportunity allowed the Choctaws to supervise a unit of the Neighborhood Youth Corps that was assigned to build new homes on the reservation; soon afterward, the tribe obtained one of the first Community Action grants in Mississippi, for $15,000. "That $15,000 was the key to all the changes that came afterward," says Martin. "We used it to plan a manage-

The tribe oversees administration of the reservation, from law enforcement to natural resource conservation.

Here, forestry worker Charles Jefferson ignites a brushfire in accordance with a controlled burn policy.

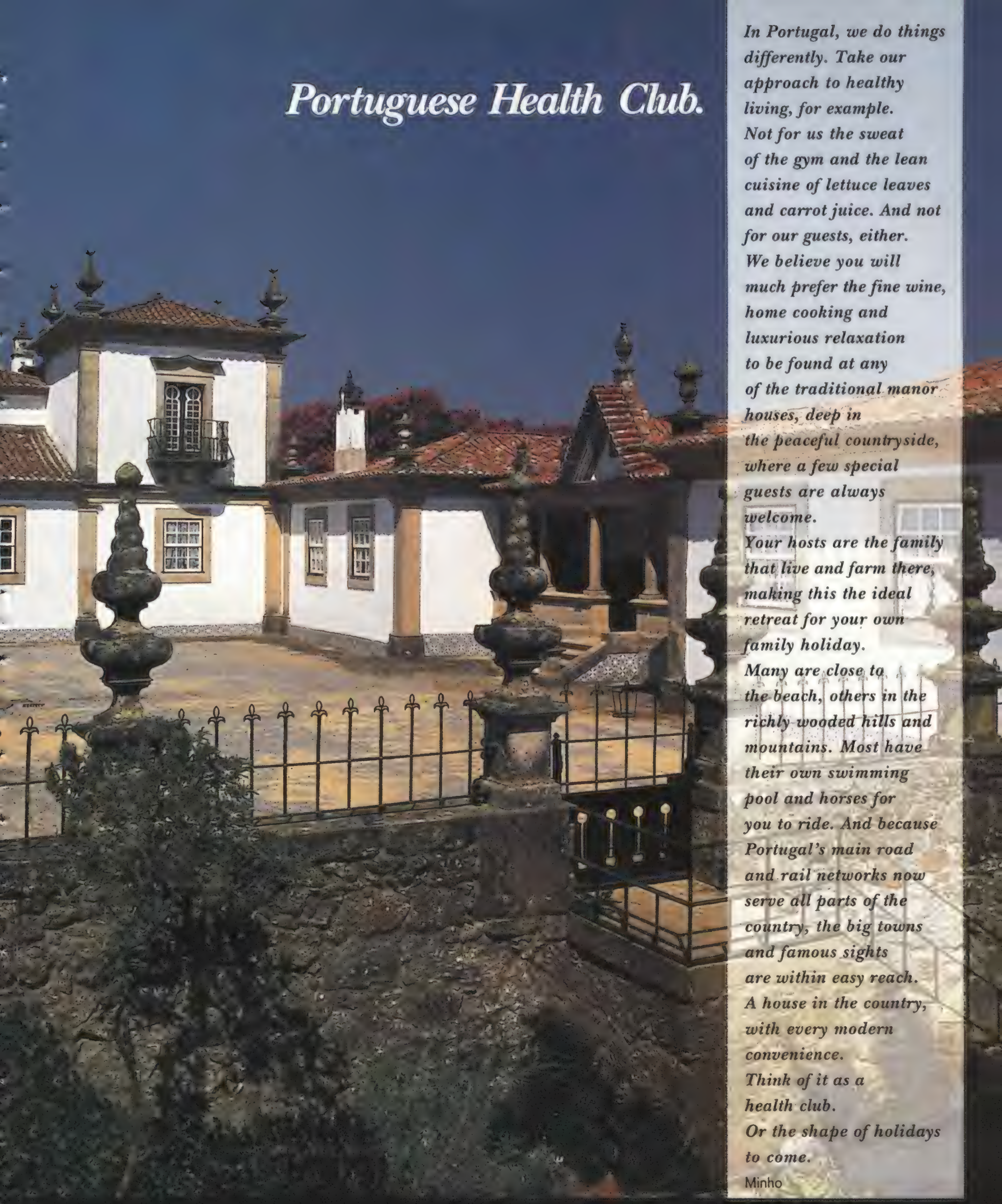
ment structure so that we could go after other federal agency programs. I felt that if we were going to handle money, we had to have a system of accountability and control, so we developed a finance office. Then we won another grant that enabled us to hire accountants, bookkeepers, personnel managers and planners."

The Choctaws remained calculatedly aloof from both the civil rights movement of the 1960s and the Indian radicalism of the 1970s. Martin says, "We didn't want to shake things up. Where does it get you to attack the system? It don't get the dollars rolling—it gets you on welfare. Instead, I thought, we've got to find out how this system works." Eighty percent of the tribe's members were on public assistance and receiving their food from government commodity lines. "It was pathetic. We had all these federal programs, but that wasn't going to hold us together forever. I knew that we had better start looking for a more permanent source of income." It would have to be conjured from thin air: the reservation was devoid of valuable natural resources, and casino gambling was an option that lay far in the future.

In key respects, Martin's plan resembled the approach of East Asian states like Singapore and Taiwan, which recognized, at a time when most developing countries were embracing socialism as the wave of the future, that corporate investment could serve as the driving force of economic development. Martin understood that corporations wanted cheap and reliable labor, low taxes and honest and cooperative government. He was convinced that if the tribe built a modern industrial park, the Choctaws could join the international competition for low-skill manufacturing work. In 1973, the tribe obtained $150,000 from the federal Economic Development Administration to install water, electricity and sewer lines in a 20-acre plot cut from the scrub just off Route 7. "It will attract somebody," Martin promised. For once, he was dead wrong. The site sat vacant for five years.

With his characteristic tenacity, Martin began writing to manufacturers from one end of the United States to the other. He kept on writing, to 150 companies in all, until one, Packard Electric, a division of General Motors, offered to train Choctaws to assemble wired parts for its cars and trucks; Packard would sell materials to Chahta Enterprise, as the tribe called its new company, and buy them back once they had been assembled. On the basis of Packard's commitment, the tribe obtained a $346,000 grant from the Economic Development Administration and then used a Bureau of Indian Affairs loan guarantee to obtain $1 million from the Bank of Philadelphia.

It seemed, briefly, as if the Choctaws' problems had been solved. Within a year, however, Chahta Enterprise had a debt of $1 million and was near bankruptcy. Pro-



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duction was plagued by the kinds of problems that undermine tribal enterprises almost everywhere. Many of them were rooted in the fact that, for most of the tribe, employment was an alien concept. Workers would abruptly take a day off for a family function and not show up for a week. Some spoke no English. Others drank on the job. Many were unmarried women with small children and had no reliable way to get to work. The tribe's accountants had already recommended selling everything off for 10 cents on the dollar.

The man to whom Martin turned was Lester Dalme, who was then a general supervisor for GM and who had been raised in rural Louisiana with a virtually evangelical attitude toward work. "My mom taught us that God gave you life and that what you're supposed to do is give Him back your success," says Dalme, a trim man now in his 50s whose office at Chahta Enterprise is as plain as his ethics. Dalme remembers facing the plant's demoralized workers. "They had no idea how a business was run, that loans had to be paid. None of them, none of their fathers, and none of their grandfathers had ever worked in a factory before. They had no idea what quality control or on-time delivery meant. They thought there was a big funnel up there somewhere that money came down. They thought profit meant some kind of plunder, something someone was stealing." Dalme told them, "Profit isn't a dirty word. The only way you stay in business and create jobs is to make a profit. Profit is what will finance your future."

Dalme cut back on waste, abolished some managerial perks and put supervisors to work on the assembly line. Day care was set up for workers with small children; old diesel buses were organized to pick up those without cars. Dalme told employees that he would tolerate no alcohol or hangovers in the plant. He kept an average of three of every ten people he hired, but those who survived were dependable workers. He saw people who had been totally destitute begin to show up in new shoes and clothes without holes, and eventually in cars. After six or seven months, he saw them begin to become hopeful, and then self-confident.

Workers speak with an almost redemptive thrill of meeting deadlines for the first time. Wayne Gibson, a Choctaw in his mid-30s who became a management

An early riser tries his luck one Sunday morning at the tribe's Silver Star Casino, opened in July 1994.

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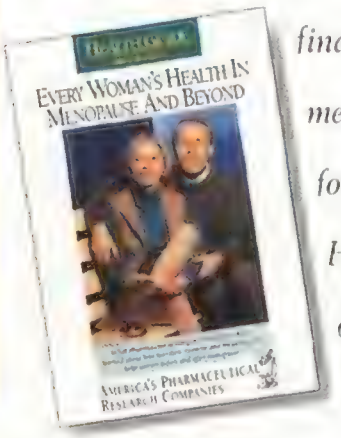

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For decades, this 1920s wood-frame bungalow, built by the U.S. government, typified reservation housing.

trainee after several years on the assembly line, recalls, "Factory work taught us the meaning of dependability and punctuality. You clock in, you clock out. It also instilled a consciousness of quality in people. You're proud of what you do. When I was on the production line and I had rejects, it really bothered me. I had to explain it the next day. We're proud of coming in here and getting that '100 percent zero defects' rating."

Chahta Enterprise has grown steadily from 57 employees in 1979 to more than 900 today. Once the tribe had established a track record with lenders, financing for several more assembly plants and for a modern shopping center followed. In 1994 the Choctaws inaugurated Mississippi's first inland casino as part of a resort complex that will include a golf course and a 520-room hotel. "Now we're more into profit centers," says William Richardson, a former venture capitalist from Jackson who was hired by Martin to function as a sort of resident deal-maker for the tribe. "We're as aggressive as hell and we take risks."

And so, today, the Choctaws have achieved virtually full employment. Increasingly, the jobs that the tribe has to offer its members are technical and intellectual, as engineers, business managers, teachers and statisticians; the tribe is, in short, creating for the first time in history a Choctaw middle class.

The scene at the Choctaw Manufacturing Enterprise, just outside Carthage, Mississippi, is typical enough at first glance. Although the building is architecturally undistinguished—just a low, white-painted rectangle hard by cow pastures and pinewoods—it is modern and spacious, and well-ventilated against the withering summer heat. Inside, workers perch at long tables, weaving wires onto color-coded boards that will become part of Xerox photocopiers. It is slow work; as many as 300 wires must go into some of the harnesses and be attached to up to 57 different terminals. Painstakingly, in deft and efficient hands, the brown and green wires are made to join and bifurcate, recombine and intertwine again in runic combinations. As they work, the long rows of mostly women listen, as do factory hands in similar plants anywhere in America, to the thumping beat of piped-in radio, and swap gossip and news of children, and menus for dinner. Across the floor, at similar tables, others are assembling telephones and putting together circuit boards for computers and audio speakers, and motors for windshield wipers.

But in another sense, the factory floor is remarkable and profound. The faces bent over the wires and phones and speakers record a transformation that no one in Mississippi could have envisioned 40 years ago when Phillip Martin came home from the military looking for any kind of job. The faces are mostly Choctaw, but among them are white and black faces, too, scores of them, all side by side in what was once one of the poorest backwaters of a state that to many seemed second to none in its determination to keep races and classes apart.

"I don't like what this country did to the Indians: it was all ignorance based on more ignorance based on greed," Martin says, in his meditative drawl. "But I don't believe that you have to do what others did to you. Ignorance is what kept us apart. We'd never have accomplished what we did if we'd taken the same attitude. I don't condemn anyone by race. What kept us down was our own lack of education, economy, health care—we had no way of making a living. I believe that if we're going to fit in this country, we'd better try our best to do it on our own terms. But we also have to live with our neighbors and with our community. We all have a common cause here: the lack of jobs and opportunities has kept everyone poor and ignorant. If we can help local non-Indian communities in the process, we do it. We all depend on one another, whether we realize it or not."

For the Choctaws especially, the mere fact of work is a revolutionary thing in a place where there was no work before. In 1989, there were four Choctaws in the Carthage plant's management; now there are 13. "The next generation will be able to manage their own businesses," says Sam Schisler, the plant's CEO, a freckled Ohioan in mauve trousers and a navy blue polo shirt who, like Lester Dalme, joined the Choctaws after running plants for Packard Electric. "I'm happy to manage myself out of a job."

There is something more. The audio speakers whose parts have been imported from Thailand and the circuit boards that have come from Shreveport are not glamorous, but they are symbolic: the children of the share-

croppers for whom a visit to Philadelphia, Mississippi, was a major undertaking have begun to become part of the larger world. "We'll be building the circuit boards ourselves at some point," Schisler says.

The plant, the humid pastures and the pinewoods lack the topographical drama of the rolling prairie and sagebrush desert that are the more familiar landscapes of Indian country. But the red clay of Neshoba County has endured a history no different in its essentials from that of the homelands of the Iroquois, the Sioux, the Paiutes or the Apaches. It too was fought over and mostly lost and, until a few years ago, was equally, even ineradicably one might have said, stained with hopelessness. It is today a land of redemption; not the exotic redemption of evangelical traditionalists who would lead Indians in search of an ephemeral golden age that never was, but a more prosaic and sustainable redemption of a particularly American kind that comes with the opportunity to work a decent job, and with knowing that one's children will be decently educated and that the future will, all things being equal, probably be better than the past.

Indian history is, after all, not only a story of wars, removals and death, but also one of compromises and creative reinvention, of Indian communities continually remaking themselves in order to survive. In the course of the past five centuries, Indian life has been utterly transformed by the impact of European horses and firearms, by imported diseases and modern medicine, by missionary zeal and Christian morality, by iron cookware, sheepherding, pickup trucks, rodeos and schools, by rum and by welfare offices, and by elections, alphabets and Jeffersonian idealism, by MTV and *The Simpsons*, not to mention the rich mingling of Indian bloodlines with those of Europe, Africa and the Hispanic Southwest. In many ways, the Choctaw revolution, like the larger transformation of Indian country in the 1990s, is yet another process of adaptation, as Native Americans, freed from the lockstep stewardship of Washington, search for new ways to live in the modern world.

Jimmy and Karen Ben and their children, (from left) Cyrus, Ira and Cheriena, represent affluence achieved. Jimmy is employed by Bureau of Indian Affairs Choctaw Agency; Karen works at Choctaw Housing Authority.

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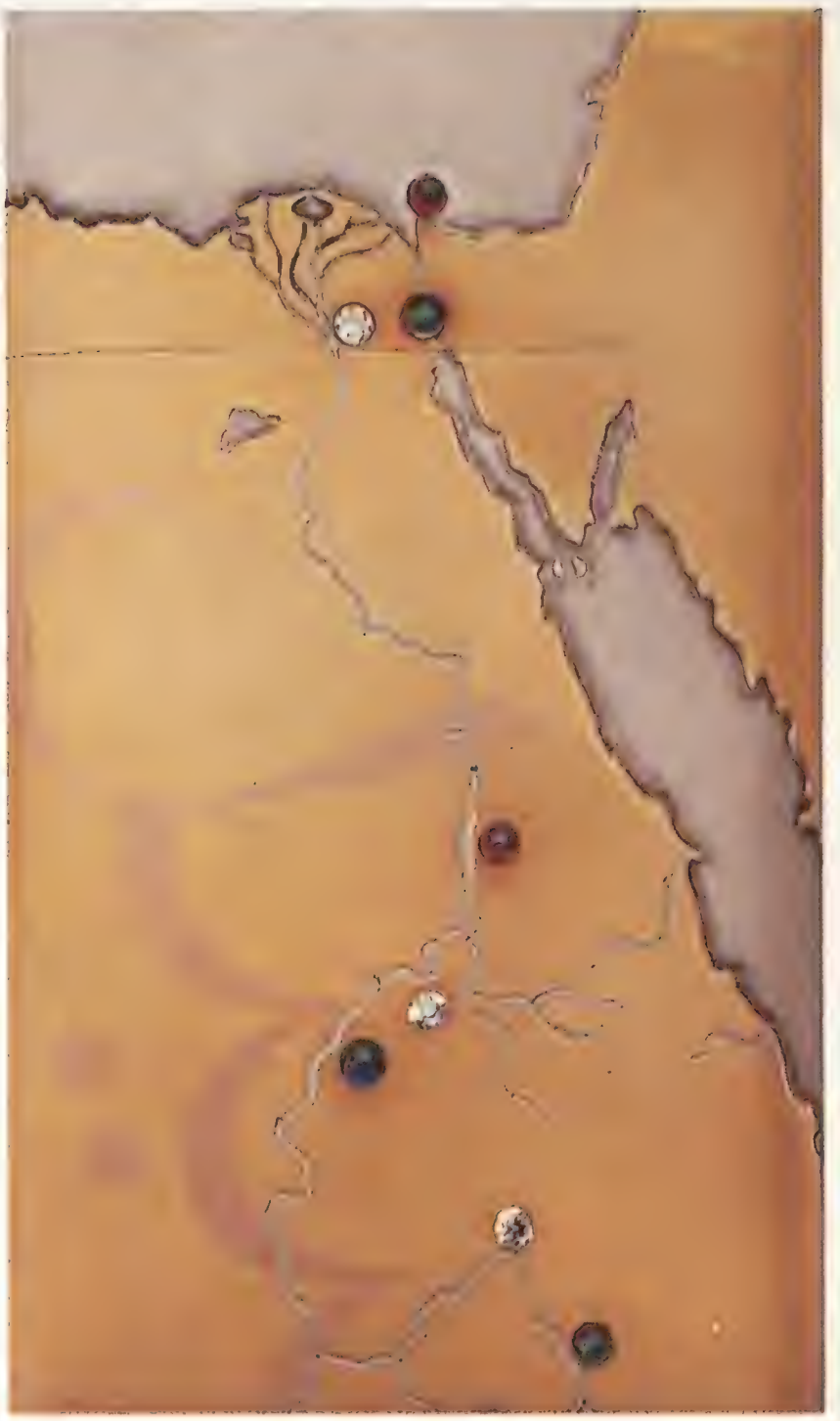
Fabergé's labor of love: a case of *cherchez la femme*

After a spectacular collection was given to a Paris museum, the story emerged of how a princess kept the flame of love burning



Gifts from a princess to a spy: an elephant with a diadem that opens to reveal the woman in question (opposite), and a map of the Nile Valley worked in precious stones and three shades of gold (above).

In the early 1960s, a collection of exquisite cigarette cases was bequeathed to the Musée des Arts Décoratifs in Paris. The gift of a somewhat mysterious elderly man named Charles Antoine Roger Luzarche d'Azay, who had been a French secret service officer early in the century, they were hallmarked and dated: 18 of them had been custom-made in Fabergé workshops between 1901 and 1915, mostly as New Year's gifts.

But from whom? It was a classic case of *cherchez la femme*, as museum curators, linguists and other experts studied the variety of esoteric and seemingly private symbols incorporated into the cases' designs: crescent moons, intertwined serpents, lists of French military campaigns, cryptic Arabic inscriptions, an elephant with a diamond-studded diadem that was actually a secret compartment containing a portrait of a woman. And, perhaps most intriguing, a map of the Nile Valley in three shades of gold, with eight places marked by precious stones, including a ruby for Port Said, a sapphire for the Suez, a diamond for Cairo.

Efforts were made to learn more about M. Luzarche d'Azay, including trips to his hometown and requests to the Ministry of War for details on his service history. But very little could be discovered about him. Then, three years ago, spurred by an exhibit of the cigarette cases in France, friends of the officer came forward. M. Luzarche d'Azay, they revealed, had been deeply in love with the beautiful but, unfortunately, married French aristocrat Princess Cécile Murat.

With that information, as well as the fruits of scholarly digging, Géza von Habsburg, who curated the Fabergé show in France, has put together some big pieces of the puzzle. Clearly, he says, the secret service officer worked undercover in the Near East, probably including Egypt. But von Habsburg continues to pursue this "case of the cigarette cases," which he regards as one of the most fascinating in Fabergé history. He asks, for example: Was the map of Egypt "connected with Luzarche d'Azay's spying activities or, more romantically, do the gems mark the secret trysting places of two lovers?" We may never know; but as he continues the search for photographs or letters, the cases speak eloquently enough for themselves.

Constance Bond

Most of the cigarette cases in the Luzarche d'Azay bequest were made at Fabergé's workshops in St. Petersburg, Russia, under the watchful eye of head workmaster Henrik Wigstrom. One of his surviving design books contains a sketch for the case with the pair of entwined serpents (at center). Pulling a case's gold loop exposes the tinder cord's tip; after being lit with a match it burns in wind or rain. It took up to a year to create one of these custom-designed pieces.

"Please, I'll never ask for anything again, let me make it to the top of this hill."

"What's that burning smell?"

"Please, I'll never ask for anything again, let me stop at the bottom of this hill."

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By David M. Schwartz

Snatching scientific secrets from the hippo's gaping jaws

Deep inside Tanzania's Ruaha National Park, biologist William Barklow sounds out the complexities of "river horse" communication

Readying his audio equipment, Barklow prepares to record subjects such as the bellowing behemoth at left.

Amphibious hippo possesses a unique ability to hear and emit sounds above and below water, simultaneously.

Imagine a rusty old trombone, dented and pitted with the ravages of age. Now imagine its owner, a jazzman past his prime, totally bereft of finesse but still bursting with gusto. He inflates his lungs and lets loose a wild earsplitting shriek, then quickly plunges the brass slide to its full length, belting out a cadence of percussive low-register grunts, brassy Bronx cheers. Four, six, eight of them before, winded, he quits.

There, for your mind's ear, is a rough approximation of what Bill Barklow is listening to on this July morning. It is one solo in a repertoire that has captivated him since he made its acquaintance eight years ago. The sounds emanate not from trombones but from hippopotamuses congregating at pools in the Great Ruaha River of central Tanzania. Whenever hippos congregate, Barklow has found, they communicate. And how! He has measured the bellow of a territorial bull hippo—an elocution suggestive of our wayward trombon-

A sizable hippopotamus population inhabits Zaire's Virunga National Park: here, two females battle it out.

ist—at a deafening 115 decibels. The volume is equivalent to a heavy-metal rock band playing 15 feet away. Yes, hippos are big talkers, but it is not the size of their sounds that fascinates Barklow. It is how they cope, acoustically speaking, with the two media of their amphibious environment—air and water. "What impresses me most about hippos," says Barklow, rocking back on his haunches and regarding his study subjects with binoculars, "is that they have to deal with these two separate acoustic environments—when it has taken other animals so long to perfect a communication system in just one medium."

Though it is one of Africa's most conspicuous and vociferous animals, the hippopotamus has received surprisingly scant attention from biologists. Little is known about its social life or behavior, and before Barklow began his studies in the late '80s, no one had investigated its remarkable vocalizations. "Here we have hippos interacting underwater and making sounds, and hippos interacting above water, making other sounds," says the Massachusetts biologist, who studied loons before he turned to hippos, "yet I think they can decode everything they hear." How long it will take Barklow to decode what the hippos hear is another matter. He spent 20 years working on loons in Maine—his recordings of their hauntingly beautiful calls have graced records and films, including *On Golden Pond*—but he thinks the loon communication system is simple compared with that of the amphibious behemoths. "It is the most complicated acoustic system I know of." He believes he has made a discovery about its basic nature: hippos seem to possess a unique ability to hear and emit sounds in stereo—both above and below water at the same time.

Three thousand years ago, when the Greeks encountered these massive mammals lolling in the Nile Delta, they named the species *hippopotamos*, or "river horse." With bulls growing up to 15 feet long, 5 feet high and 8,000 pounds in weight, hippos are the second-largest terrestrial mammals. Only elephants are larger.

Gregarious and generally aquatic during the day, hippos are solitary and terrestrial at night, hauling themselves out of the water to feed. They can walk five miles in search of grass and sedge, which they tear from the ground with wide, fleshy lips. One night's take can be 100 pounds, but in light of their size, it is not a particularly gluttonous feast. Nocturnal activity is necessary because hippos have a very thin epidermis (the protective outer layer of skin), leaving them vulnerable to desiccation. Hence, they spend the daylight hours in water or mud. The myth that hippos sweat blood derives from a pinkish, oily skin secretion that helps to protect them from the sun's rays.

Although feeding always occurs on land, most everything else—courtship, copulation, birth and nursing—takes place underwater. A hippo can dip below the surface for five minutes at a breath because the hemoglobin in its red blood cells, like that of cetaceans (whales, dolphins and porpoises), latches onto oxygen with unusual tenacity. While hippos appear to be great swim-

Contention among cows usually arises when members of competing herds encroach on one another's turf.

An adult hippo, hurt in a tussle, nurses his wounds during an afternoon soak at an East African water hole.

mers, they actually move underwater by walking or running along the bottom. Whether in aquatic or terrestrial mode, their speed belies their bulk: they've been clocked in short dashes at 30 miles per hour.

Herds typically space themselves out at intervals of about a hundred yards, each herd with roughly 10 to 100 animals. Cows are guarded vigilantly by a single highly territorial bull. When a show of tusk is not enough to deter transgressors, a territory holder will lock jaws with a challenger in vicious, sometimes lethal, battles. (In older males, razor-sharp canines can grow more than two feet long.) As a result, the hide of every experienced bull hippo is well gashed, sometimes so badly it looks like Arabic graffiti. The comical, huggable hippo of cartoons and children's books is, in reality, a bellicose beast of murderous temperament.

It is not surprising that hippopotamuses would evolve an ability to speak to one another. It saves energy and even lives to be able to advertise location, social status and mood, and to communicate concise messages convincingly, especially "Get the hell outta here!" Since hippos pass their days in water so murky that visibility is measured in centimeters, the use of vocal, rather than visual, cues would be the most effective.

Bill Barklow had never thought about any of that before he made his first trip to Africa in 1987. Although he was on a commercial safari, he had an opportunity to break away from the group and spend an afternoon alone at a hippo pool. He settled in for a few hours of uninterrupted observation. "The pool was enchanting," he recalls, "lined with palms and papyrus, like the Nile in ancient Egyptian wall paintings, but nothing much was happening with the hippos. After a little while, I was bored." There were a dozen of them, and they spent most of their time underwater. Sometimes they would rest in what he calls their "amphibious position"—ears, eyes and nostrils above water, but mouth, throat and everything else below. But activity picked up later in the afternoon, and so did the hairs on the back of his neck when one hippo spotted him, stared for about ten seconds, then let out a thunderous blast so concussive that he could actually feel it. Other hippos who had been underwater began to surface and they, too, called. Barklow was thrilled by that seemingly unremarkable event, and it would change the course of his career.

Acoustically, water and air do not mix. Water is 800 times denser than air, and because of this great density difference, virtually no sound travels from one medium to the other. How then, did animals who had been completely submerged know to surface when the blast was given? Or was the timing a coincidence? He saw it happen again. It certainly seemed that underwater hippos were hearing above-water sounds. If so, can underwater hippos make sounds that can be heard above the surface? Could they have a repertoire of underwater sounds no human has ever heard?

On his fourth African trip, he is still trying to answer some of those questions. He is positioned about 15 feet from a busy hippo pool at a bend in the river, hunched

A large gathering of hippos crowds into a pool in the South Luangwa National Park in Zambia. These multi-ton mammals once thrived from Cairo to Capetown, but habitat loss has restricted their range.

over a speaker adapted for underwater use. It is wired to a digital audiotape player powered by a car battery and lashed to a tripod crudely fashioned from three branches. The whole speaker assembly is cantilevered at the end of a 15-foot pole. Barklow starts the tape player, and for an instant, the incongruous tones of soprano Kathleen Battle singing *La Traviata* resonate across the river. He chuckles and hits the "stop" button. "Just a test." (He prefers to test his equipment with Verdi rather than hippo music because the real hippos quickly get used to hearing the recorded hippos and stop responding.) While he runs final tests, his field assistant (and wife), Lori-Ann LeBlanc, readies the video camera she will use to record the behavior of unsuspecting hippos confronted with potentially threatening sounds. Barklow hoists the long pole and shimmies it through his hands, extending it over the water. It bows like a fishing pole as he lowers the dangling speaker into the water. Next into the drink goes the hydrophone, an underwater microphone that is the size and shape of a hockey puck. It too hangs off a long pole, wired to a tape recorder and Barklow's headphones. The hydrophone will pick up the sounds broadcast through the speaker and any hippo response.

Barklow scans the water for an animal in the amphibious position, his first experimental subject of the day. He wants to see if hippos resting at the surface will respond to underwater broadcasts of previously taped territorial bellows. If they do, it would be strong evidence that they can hear underwater even when their ears are above the surface. It is the reciprocal of the situation he observed eight years ago, when underwater animals seemed to respond to above-water sounds.

Nine times out of ten, before Barklow can target an appropriate animal and coordinate his playback with LeBlanc's videotaping, the prospect sinks out of sight.

Herds are concentrated in east-central and southern Africa: estimated world hippo population is 157,000.

As any field biologist knows, designing experiments is one thing, but getting them to work is another. In several hours today, Barklow manages to deliver only three broadcasts to hippos in the amphibious position, and not one of the broadcasts has been greeted with anything other than total indifference.

This time, he focuses on "Sleepy," an animal whose eyes seem to be perpetually at half-mast. With Sleepy in the amphibious position, LeBlanc starts running video, and Barklow hits "play." Almost instantly, several tons of hippo lurch through the water, emitting a brief *huff.* The moving animal then encounters three compatriots and dips underwater. Barklow is triumphant. "We woke up Sleepy! Wouldn't you love to know what's going on?"

Between African research trips, Barklow has been trying to figure out the anatomy of hippo hearing and sound production. An amphibious hippo, resting with only the top of its head above water, trumpets its sounds into the air through flared nostrils. By the laws of physics, this same sound emission cannot pass into water. If it entered the water through the animal's submerged mouth, bubbles would be visible, but Barklow has never seen such bubbles. Perhaps there is another way for hippos to get sound into the water. Dolphins give off some of their underwater repertoire through a fatty area on the forehead called the "melon." It can transmit sounds into water because its density is very close to that of water. Barklow investigated hippo heads for an analogous structure, and found one—a roll of fat in the throat, just beneath the larynx. Since the larynx is the source of all hippo vocalizations, this is the perfect location, and it has the same density as water.

There remained the question of whether a hippo could hear and localize underwater sounds. As any scuba diver knows, hearing sounds underwater is no problem. What's difficult is telling where they come from. Airborne sounds can be localized because they arrive at one ear sooner than the other. Brain processing "tells" the animal that the first ear to hear the sound is the one closest to it. To face the sound, we simply turn until it arrives at both ears simultaneously. But when sounds are waterborne, it's a different story. Waterborne sounds, conducted through our entire skulls, arrive at both ears at essentially the same time, and from every direction at once. They seem to be coming from the middle of the head.

Barklow looked again at cetaceans. In the 1960s, Ken Norris of the University of California, Santa Cruz, drew on studies noting that the middle and inner ears of porpoises are suspended by ligaments from the rest of their skull. This would cut down considerably on random bone conduction. Examination showed that each middle ear contacts a tube of fat that runs alongside the inner surface of the lower jaw to an unusually thin dish-shaped area. Norris hypothesized "jaw hearing": sounds from the water are conducted through the thin part of the porpoise's jaw, up the fat tubes inside the lower jaw, to the ears. Since the sounds arrive at the ears independently of one another, they can be localized.

After having observed hippos communicating underwater in Africa, Norris visited the Smithsonian's mammal collection and found a huge hippo skull collected by Teddy Roosevelt. Norris was struck by a dramatic similarity to cetacean skulls: each hippo jawbone possessed a saucer-shaped area as thin as a dime. Could hippos also be hearing with their jaws? The evolutionary distance was not so great as one might imagine. Hippos are artiodactyls, or even-toed ungulates, a group that includes pigs (generally regarded as their closest cousins),

California-based David Schwartz is also the author of many children's books, including If You Made a Million, *featuring Hermione the Huggable Hippo.*

An adult hippo, from a Ruaha River herd, perks up its ears to focus on airborne sounds. Barklow believes that hippos rely on a separate hearing site, perhaps located in the jaw, to process underwater sounds.

while cetaceans are believed to have evolved from an artiodactyl ancestor. Norris saw what could be a deep significance in the similar jawbones. "Here's an animal, the dolphin, that's descended from ungulates and it hears through its jaw," he says. "And here's another animal, the hippo, which is an ungulate, and it has a structure suggesting that it, too, may hear through its jaw!"

When Bill Barklow looked at hippo skulls, he confirmed the thin dishlike areas of the jaws. He also examined the ears and found that, like the cetaceans but unlike most other mammals, a hippo's middle and inner ears are suspended by ligaments, not embedded in the skull. He saw three attachment points for each middle ear: two that he had expected—to the canal coming from the outer ear and to the hearing sensors of the inner ear—and one that he found very significant. It went to a part of the skull that directly contacts the lower jaw. Here was anatomical ammunition for Barklow's theory that hippos have a second set of ears. "A hippo resting in the amphibious position could be keeping track of both worlds at the same time. Its external ears are above the surface, listening for airborne sounds, and its jaw is a foot below the surface, monitoring the water. It could work!" Barklow is now collaborating with an otolaryngologist in a search for fat channels or some other means of sound conduction from the hippo jaw.

Meanwhile, support for a whale-hippo connection has come from unexpected quarters. Jerold Lowenstein, an immunological researcher at the University of California, San Francisco, has compared the blood serum proteins of whales with those of many ungulates, including cattle, pigs and gazelles. He found them more similar to those of hippos than any other group, suggesting a closer evolutionary relationship between the two than was previously suspected. But DNA studies have failed to confirm Lowenstein's finding, and it remains a tantalizing but inconclusive tidbit of information.

Whether hippos ultimately prove to have their closest evolutionary affinity with whales, pigs or something else, there's no doubt that in historical times they have had little affinity with humans. The two species have rarely coexisted easily. Although the modern species of river hippo has always been limited to the African continent, it once ranged from Cairo to Capetown. It has since been eliminated or sharply reduced in much of its range and is now concentrated in east-central and southern Africa. Generally considered to be the biblical behemoth, hippopotamuses were displayed as curiosities in Roman circuses, according to Pliny the Younger. Stripped and dried, their thick hides made formidable shields for Roman warriors.

For a period around the turn of the 18th century,

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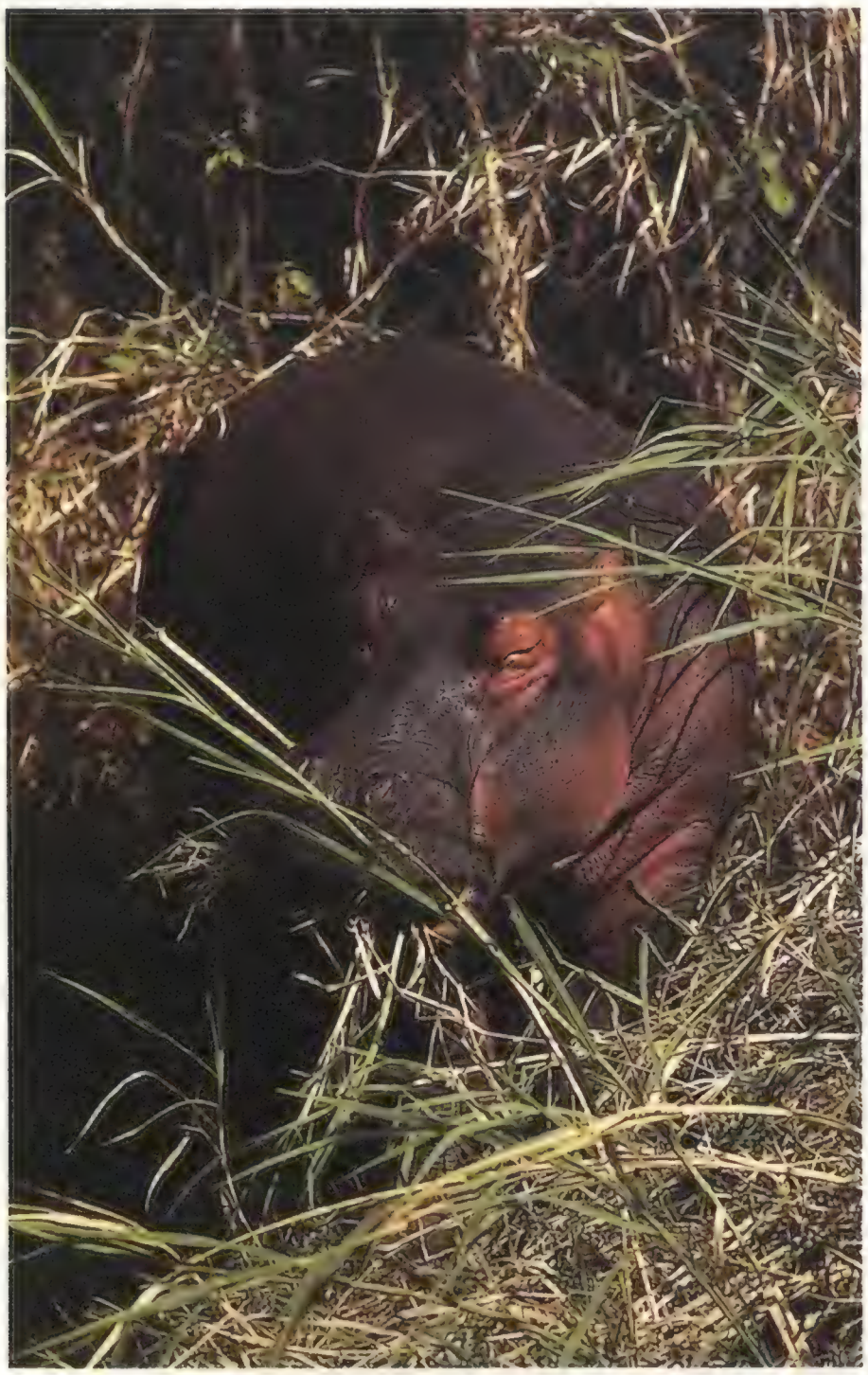
hippo tusks found favor among dentists, who used them to make artificial teeth. Unlike those made from elephant ivory, these did not yellow. But the invention of porcelain enamel changed all that, and the market for hippo tusks dwindled. It has recently taken an unexpected and unwelcome turn upward. The 1989 ban on the trade in elephant ivory has helped those pachyderms but not hippos, whose ivory has surged in demand. From 1988 until 1991, exports of raw hippo ivory more than quintupled. Not surprisingly, hippo populations have correspondingly dipped. In 1994, an aerial census in eastern Zaire showed only 11,000 animals where 23,000 had lived in 1989. An estimate by Keith Eltringham of Cambridge University puts the world hippo population at about 157,000.

"It is a cause for concern," says Eltringham, who chairs the hippo specialty group of the International Union for the Conservation of Nature. "People worry about elephants, but most conservative estimates put elephant populations at over half a million, three times more than hippos. And because of the hippo's strict requirements—it needs both water and grazing—it is actually much more vulnerable." Although not in immediate danger of extinction, hippos are seriously threatened by the loss of grazing lands due to encroachment of rapidly growing human populations.



One hungry hippo munches tasty grass; at night, the animals graze ashore, cropping as assiduously as sheep.

Of course, hippos have never gone down without a fight. When applied to human interlopers, their tusks have the same effect as the scimitars they resemble, and the strength with which they can be applied is legendary. Accounts of African travels are peppered with horrific tales. In *Wild Beasts and Their Ways*, the Victorian explorer Sir Samuel Baker describes a hippo charging the paddle wheeler on which he was traveling. "Not content with breaking several floats off the paddle-wheel, it reappeared astern, and, striking the bottom of our iron vessel, it perforated the plates in two places with its projecting tusks, causing a dangerous leak." While filming hippos underwater in Kenya's Mzima Springs in the 1960s, Alan and Joan Root were attacked by a subadult male. Joan was shaken but unscathed, but Alan received the brunt of the animal's anger. "He got my leg right into his mouth, so that the left-hand canines were slicing through the calf while my foot and ankle were between his right-hand molars," Root later wrote in a dispatch from Nairobi Hospital. "My calf was bitten right through and chomped three or four times, fortunately all more or less in the same place. The hippo then shook me like a rat. . . . My most vivid recollection here is deciding that my leg had had it and the feel of the hippo's whiskers on the back of my thigh as I was shaken about. He then dropped me and went off." But even Root was lucky compared with several hundred people a year who do not survive close encounters of the hippo kind. There is little agreement as to which African animal causes the most human fatalities, but hippos are often mentioned for top honors. They are certainly more deadly than many feared predators, including lions.

Not only their ferocity has been underestimated, but also some of their benefits. More than just interesting natural curiosities, hippos play a critical role in African river ecology. Many waterways would be virtually lifeless were it not for hippos—or, more exactly, their dung. Hippo dung forms the nutrient base of an aquatic food chain that begins with microscopic plant life and culminates in fish, crocodiles and predatory birds. Their daily migrations also affect vegetation. One researcher has suggested that grazing hippos are responsible for riverine forests through their constant mowing of grass, which suppresses fires. The hippos do not consume

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Hippomania swept Victorian England after Egypt's viceroy gave the London Zoo its first hippo, in 1850.

trees, but the fires would. Aquatic vegetation cannot establish itself where hippo herds move about. When poachers decimated the hippo population of the Okavango River in Botswana, channels clogged, interfering with water movement and the region's flooding cycle.

In one remembered episode, humans and hippos developed a positively chummy relationship. In the mid-19th century, at the height of an English craze for exotic animals and natural history specimens, the viceroy of Egypt sent a male hippopotamus calf to the London Zoo. Named Obaysch for his native island in the White Nile, he was the first of his species displayed in Europe since Roman times. People lined up by the thousands each Saturday to visit him at his sumptuous quarters in Regents Park. *Punch*, the English humor magazine, chronicled every event in the life of H.R.H. (His Rolling Hulk). Silver models of Obaysch sold briskly, as did sheet music for the hit tune "Hippopotamus Polka," which depicted on its cover an elegant lady dancing with a distinguished-looking hippo in evening dress.

Of course, it's unlikely that *Punch* or anyone else listened to Obaysch the way Bill Barklow is listening right now to the hippos of Ruaha National Park. He keeps a wary lookout for crocodiles as he sidles over to a large boulder that juts into the river's sharply cut bank. The site offers good views of the hippo pool and enables him to drop the hydrophone into the water just ten yards from all the action. Above water, the herd is bellowing in unison, and the choruses are being answered by other herds, the noise passed down the watercourse like a bucket in a fire brigade. The phenomenon is called chain chorusing. On an earlier visit, Barklow and a crew of students traced and timed a chain chorus that traveled five miles downriver in about four minutes. "I know of no other animal that uses its whole herd in this way," he explains. "Chain chorusing lets the group broadcast its size and location. The bigger it is, the more noise it can make. Since a big group is probably controlled by a big, experienced male, this is a potent advertisement for unattached females and a warning to other males."

For all the acoustical variety of groans, grunts, honks, rumbles and bellows that can easily be heard at a hippo pool, Barklow is even more intrigued by what the animals have to say underwater. In 1989, on his second African trip, he was probably the first person ever to hear the cacophony of underwater sounds made by hippos: soft flutters, plaintive moans, staccato clicks, eerie squeals and more. He is recording these sounds today, trying to tie them to the animals' behavior.

"About 80 percent of their vocalizations are given underwater," he says, "and the underwater sounds are the ones we know the least about. They probably indicate a level of social organization no one has ever suspected. Some of the answers are in there . . ." He nods toward a metal box the size of a briefcase. It contains hundreds of hours of stereo sound recordings from both above and below the surface, and corresponding video recordings of the animals' behavior above water. Later, in his lab at Framingham State College near Boston, he will run the sound recordings through a computer program that produces visual representations called sound spectrographs, which allow him to analyze the sounds.

Query: Do hippos echolocate?

The hydrophone is picking up clicks now. They come in clusters, each a rapid-fire delivery called a "click train." Like so many of Barklow's hippo findings, click trains have a provocative counterpart in cetaceans: dolphins use them to locate underwater objects through echolocation. "Do hippos echolocate?" he asks. "Possibly. But possibly they just click to give their location in murky water. They could be saying, 'Here I am, don't bump into me!'" He has plans for an experiment at the Toledo Zoo's Hippoquarium, where the behemoths can be viewed underwater. Barklow will place oil drums in the tank at night and listen with hydrophones to see if the click trains increase as soon as the residents start running into the unexpected obstacles. Once they learn

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where the drums are, he'll shuffle the drums around to see if the hippos resume clicking.

The clicks are still a mystery, but the clacks have been solved. Occasionally, Barklow has heard an underwater clacking sound quite distinct from click trains. "I knew something interesting was going on," he says, "but I had no idea what it was." While clacking, the hippos seemed to be involved in intense underwater activity. An agitated animal or two would surface in churning water, then head right back down. Barklow mentioned the observation to Stephen Krueger, a zookeeper in Toledo. With help from Bubbles and Cupid, the Hippoquarium's resident couple, Krueger figured it out. Through the exhibit's glass walls, Stephen Krueger saw the two engage in ritual tusk clashing—not combat, but courtship. Mouths agape, they circled in a gyrating dance, turning, twisting, arcing through the water, jousting all the while with their teeth. After 15 to 30 minutes, they copulated. Hydrophones confirmed that sparring tusks create the clacking sounds that had perplexed Barklow on the Ruaha. In July, Krueger last witnessed the hippo courtship dance. Bubbles' calf is due in mid-February.

I had certainly seen my fill of hippos in Tanzania, but I was enticed by the prospect of underwater viewing. For all its barrel-shaped heft, I was told, an underwater hippo is a graceful beast indeed. "You cannot imagine how agile and athletic they are," said Jeff Jewitt, then public relations director for the San Diego Zoo, where a new exhibit, "Hippo Beach," has the nation's second underwater hippo viewing chamber. Since opening last May, it has become the zoo's most popular exhibit in recent memory. I had to see it.

I parked myself on a bench in front of a two-inch-thick wall of glass designed to stop 8,000 pounds of hippo flesh hurtling at 15 mph. The two leviathans bounded effortlessly across the bottom. They galloped, gamboled, cantered, pirouetted—then rested, one's head on the other's shoulder. They even looked happy. I thought of gymnasts, hurdlers, astronauts walking on the Moon. Eavesdropping on the excited chatter of my bench mates, I learned that the graceful hulks brought ballet dancers most often to mind. Ballet dancers? Happy hippos as ballet dancers? Could it be that those cartoons and children's books weren't so far off after all?

Jabba, one of a hippo pair residing at San Diego Zoo's new exhibit "Hippo Beach," takes an underwater stroll. Observed in the wild, hippos often seem to be swimming when they are traversing the river bottom.

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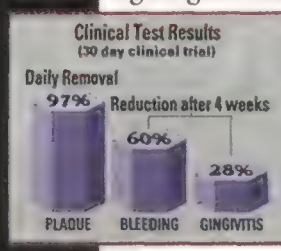

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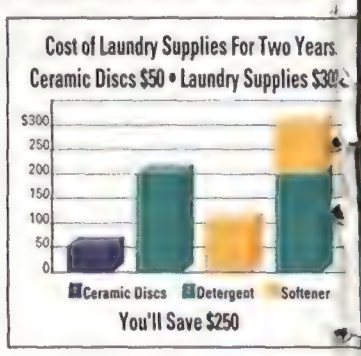

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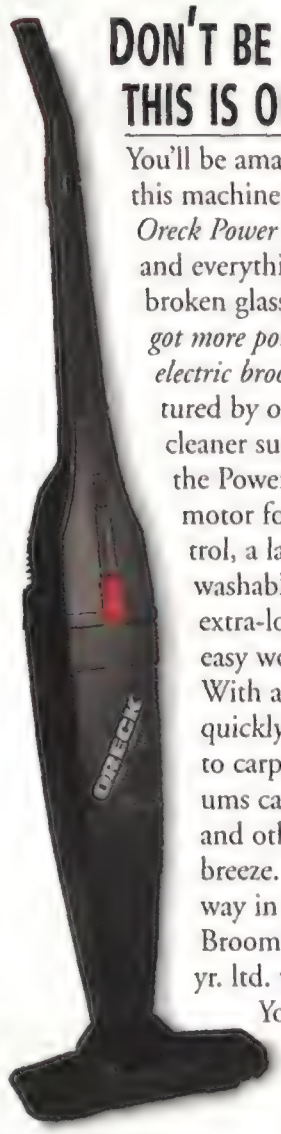

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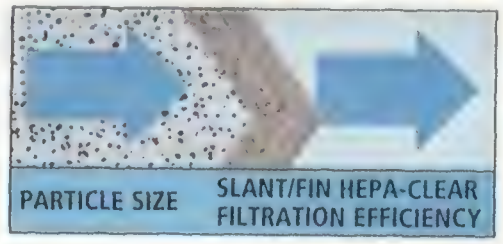

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By Paul Gardner

When France was home to African-American artists

Everything was open to them in postwar Paris, as a new exhibit in New York proves

Cityscape (1955) is Herbert Gentry's view of Montparnasse. "The painting started non-figuratively," he says today; "then I saw a form appearing."

Herbert Gentry can remember Paris in the summer of 1953 as though it were yesterday. Early evening usually found him at La Coupole, the unrivaled late-night brasserie in Montparnasse on the Left Bank. The bright marquee shone like a beacon for the swarms of chattering tourists, students, arm-in-arm twosomes and habitués seeking an aperitif before settling in for an unhurried dinner. La Coupole—or maybe the Café du Dôme, farther down the street?

On a typical evening during this perfect summer, with the gray and gold city bathed in sparkling light, Gentry, a 33-year-old African-American artist, sits on the outdoor terrace of La Coupole. Gentry first saw Paris in 1944; he arrived as a soldier just after the city's liberation from the German Occupation. "It's so beautiful, I felt *so good*," he later told his mother with tears in his eyes, explaining to her why he wanted to go back there to study painting rather than complete his business courses at New York University. Get on with it, she urged him.

Watching the parade of passers-by from his table, Gentry sees the sculptor-painter Alberto Giacometti, best known for his fragile, elongated human figures, walk toward the Coupole, then enter the Dôme. He knows that Giacometti will return to the Coupole later for a meal. It's a nightly ritual: when Giacometti enters, sometime after 10, the waiters will ceremoniously shake his hand. But when he sits down to dine alone, no one will bother him.

Gentry himself has gotten into a comfortable pattern since arriving seven years ago; before going to dinner, he'll return to his studio in Montparnasse for two more hours of painting.

But first Gentry drops briefly into the Dôme. Through the smoky haze and buzz of conversation, he scans the seated crowd for the other expatriate abstract painters from America who regularly stop in—Sam Francis, Al Held, Joan Mitchell, Ed Clark.

Gentry spies Clark, a young African-American who studied at the Chicago Art Institute, huddled with Joan Mitchell. The two of them are discussing texture and brushwork like there's no tomorrow; Mitchell has just ordered *un scotch*, her third. She downs it quickly, with cigarette puffs. "Helluvan hour," she murmurs huskily, "but time for my Indian rope tricks again with the paint." Kissing them on both cheeks, she glides into the darkening night. "You missed Harold Cousins," says Clark, rubbing a daub of blue paint from his hand. "He's off to meet his wife."

Their friend Harold Cousins, a sturdily built sculptor who lives near the Eiffel Tower, is yet another African-American who is creating art in Paris. He arrived four years earlier, bringing with him a trunk full of metal, nails, wood and cloth to use in his found-object works (p. 109); he was afraid that these kinds of materials might be scarce in postwar Paris. When the trunk burst open on the street, delighted French children watched as he chased down the scattered pieces. It's a story that the four of them—Gentry, Clark, Cousins and Cousins' wife, Peggy—frequently laugh over.

Herbert Gentry, here in front of his 1958 painting *The Claw*, ran a club in Montparnasse called Chez Honey and introduced many artists to each other.

Herbert Gentry, Ed Clark and Harold Cousins were not the only African-American artists who lived and worked in Paris after World War II. There were actually quite a few. Now, the Studio Museum in Harlem has organized an exhibition honoring seven of them. "Explorations in the City of Light: African-American Artists in Paris, 1945-65," containing 70 works, opened there in January. The exhibit will remain in New York City until June 2, then travel to the Chicago Cultural Center, the New Orleans Museum of Art, the Modern Art Museum of Fort Worth and the Milwaukee Art Museum. The show, including all stops on its itinerary, is sponsored by Philip Morris Companies Inc.

The other four artists in the exhibition are Lois Mailou Jones, Larry Potter, Beauford Delaney and Barbara Chase-Riboud. Not all of these artists knew each other in France. They did not even necessarily live there at the same time; in fact, Mailou Jones first went there in the late 1930s, while the much younger Chase-Riboud didn't go until 1961. The common thread holding these seven artists together is this: they all found a sense of freedom, living and working in Paris, that they hadn't experienced back home.

"We trace the rise of African-American artists who left their own shore to follow their urgent personal visions," explains Kinshasha Holman Conwill, director of the Studio Museum.

"We've looked at the role of African-American artists in Europe, but not after World War II, when American art became dominant. Blacks realized that social barriers could fall and that opportunities existed, but the opportunities would be greater abroad. We know about the writers who thrived in Paris, even the musicians, but visual artists tend not to get mentioned. These seven are diverse in age and background. They're special because they dared to take risks."

The artists made their way to France by varied paths. Lois Mailou Jones first went over on an educational fellowship. Later, while a member of the Howard University art faculty for 47 years, she often spent summers in France, painting street scenes in Paris and landscapes in the south (p. 110). Now 90, Jones still paints in her studio in Washington, D.C.; on the wall hangs a huge black-and-white photograph of her working in her Paris atelier in the late 1930s.

Three of the seven artists were helped out by the fact that they were veterans—Cousins had been in the Coast Guard, Clark in the Air Force, Gentry in the Army. They realized that the G.I. Bill enabled them to pursue an art education abroad. Weary of segregation in the United States, they turned to Paris where, says Gentry today, "blacks were not separated from their white brothers. We did not feel racial tension."

As the '50s marched on, two others—both abstract painters—made the pilgrimage and stayed: Beauford Delaney, who came from Tennessee by way of a chilly loft in Manhattan, and Larry Potter, from Harlem, who became a close friend of Gentry's. And finally, Philadelphia sculptor Barbara Chase-Riboud (p. 113) made the crossing after earning her M.A. degree in art from Yale University.

"The big difference between expatriates of the 1920s and those of us who came to postwar Paris is that most of the first ones were wealthy, while most of us were not," says Gentry. "Paris was a city where everything was open to us." Among other African-Americans living there at the time were Richard Wright and James Baldwin. Author of *Native Son* (1940), a portrait of a hapless youth trapped by his own defiance, Wright traded news and played the pinball machines with Baldwin in Left Bank cafés. Their novels and essays, still widely read in American high schools and colleges, confront issues of inequality and the fierce dilemma of identity.

Unfortunately, most of the black visual artists who worked in Europe had a more difficult time finding recognition in this country. Lowery Sims, curator of 20th-century art at the Metropolitan Museum of Art in New York City, believes that the art world has been remiss in recognizing African-Americans as viable members of the art community. There have been some bright moments. The Boston Museum of Fine Arts mounted a retrospective of Lois Mailou Jones' work 23 years ago. In 1992, a bronze sculpture by Barbara Chase-Riboud was acquired by the Met. Several of the seven Paris artists have American dealers; and a monograph on Ed Clark and a biography of Beauford Delaney will soon be published. Now comes the Studio Museum show, the first to fully document the artists' Paris years.

It was Herbert Gentry who presided over the postwar group like a host at a fabulous party. On arrival in 1946, he roamed from the Parc Montsouris to the twisting paths of Pigalle, but his life belonged in Montparnasse. He plunged into French civilization courses at the Sorbonne, enrolled at an art school and took lessons from the master Cubist Georges Braque. Examining the rhythmic energy and pull of the unconscious in Gentry's work, the analytical Braque told him, "Your temper is not like mine. You're emotional like Picasso." That strong emotional quality can be seen in such paintings as *Cityscape*. "The painting started nonfiguratively; then I saw a form appearing," says Gentry, who commutes today between Europe and the Chelsea Hotel in Manhattan. "It's a very abstracted view of Montparnasse."

Gentry became a Left Bank "personality" in 1949 when he opened Chez Honey, a café and nightclub in Montparnasse. During the afternoon the place had a snug coziness, especially on damp, drizzly days. Customers read newspapers and munched on sand-

Paul Gardner and Chris Maybach produced the documentary Art City: Making it in Manhattan *(Coe Films).*

wiches. Artists relaxed and talked shop.

At night, Chez Honey's tables were covered with sheets of paper for the serving of couscous and *steak-frites*. On the brick walls hung the works of young painters. Past the bar, on a platform near the end of the room, visiting American jazz musicians played sizzling tunes through the blue smoke of Gauloises cigarettes. The club was popular. Richard Wright brought existential philosopher Jean-Paul Sartre to hear the hot phrasing of Zoot Sims and Duke Ellington. Romare Bearden, who lived in Paris in 1950, often stopped by. A portly gentleman who liked to sit at the bar turned out to be Orson Welles. Three gangsters showed up one day, and Gentry could tell that they wanted protection money. "I told them to get out," he says. "These were French gangsters, and I'm from New York, so I wasn't afraid of them." The night, Lena Horne came by. When sang an impromptu "Honeysuckle Rose," the packed house cheered. Gentry spotted the three thugs; they seemed truly impressed and pushed off. He never saw them again.

Gentry closed Chez Honey in 1951; it was taking up too much of his time. He'd begun to exhibit in Paris, along with Joan Mitchell, Sam Francis and Harold Cousins. Two years later, sailing back to Paris on the *Ile de France* after a visit to New York, he made friends with Beauford Delaney. Then in his early 50s, Delaney had set out for Europe without a firm destination

Harold Cousins' *King of the Musicians* (1955): his wife, Peggy, sees the found-object work as a bass player going to a Left Bank jazz gig.

Laying the canvas on the floor and painting with a push broom, Ed Clark created *Maple Pink* and other Abstract-Expressionist works.

in mind. Strolling the deck together on a moonlit night, the two leaned against the railing, peered into the churning sea and reflected on their lives. "I'm going to live in Rome," Delaney told him, and then asked, "What's special about Paris?" Gentry chose his words carefully. "It's the city of Utrillo and Renoir and Degas. You can feel them. And, to be able to live on little money is the best basis for an appreciation of beauty anywhere. Also, you'll never feel like an outsider."

Once in Paris, Delaney unpacked for a short stay at the Hotel des Ecoles in Montparnasse, where he promptly met Ed Clark, who lived down the street. Just about half Delaney's age, Clark had come over earlier on the same ship. Clark showed him around, taking him through the Luxembourg Gardens, where youngsters launched toy sloops and a student band played tunes by Massenet. As they passed the Dôme, Delaney was suddenly greeted with a hug by James Baldwin, whom Delaney had encouraged as a writer in New York. Delaney sat down with his friends and ordered a *café-crême*. He would never reach Rome.

Clark had a studio at an art school because he was on the G.I. Bill, but it was often tough going for both him and Delaney. "We lived on a prayer," recalls Clark, who now has a loft near the Flatiron Building in Manhattan and returns often to France. Delaney transformed his hotel room into his studio, flinging open the old red velvet drapes to flood the space with light. An opera and jazz buff, he unpacked a record player and put on some music. Carefully arranging his brushes, he went to work. Delaney died in France in 1979, when he was in his 70s. The year before his death, the Studio Museum in Harlem mounted a retrospective of his paintings, some of them abstract, others expressionistic portraits of James Baldwin, Marian Anderson (opposite) or simply anonymous peo-

The small oil *Porte de St. Cloud* typifies work of Larry Potter in the early 1960s; he was influenced by French-born Maurice Estève.

Right: the background in Beauford Delaney's *Portrait of Marian Anderson* (1965) recalls many of his abstract works of the same time.

Lois Mailou Jones has returned to southern France many times since her first trip in the late '30s; this landscape dates from 1989.

Nostradamus I (Bone Sculpture #2) reflects the interest in archaeology and Surrealism of artist Barbara Chase-Riboud (opposite, in studio).

ple he met. Delaney's life was a struggle against poverty, but as his friend, novelist Henry Miller, observed, "with pigment, he was a millionaire."

Three years after Delaney's arrival, another artist friend, Larry Potter, arrived in France on the *Ile de France.* Potter had met Gentry at a party in Greenwich Village, and Gentry had encouraged him to make the move. Potter was not disappointed. "Paris has me dazzled," he wrote to a New York art collector whose purchases financed his trip abroad. Suffering from asthma, he had not fought in the war. Potter lived on the Left Bank with a Frenchwoman named Nicole Toutain and became chums with Clark, Delaney and Gentry.

They talked art constantly, visiting each other's studios and bucking each other up during low spells. One night, Gentry took Potter on an all-night walk around Paris. At 6 in the morning, they dropped by to see Delaney, who had been painting all night. That morning, they stood back and admired the color-saturated abstract paintings he was working on. Opening a window, Delaney murmured softly to them, "The sky is different here, in paradise. It's another blue." It was a color he would catch on canvas.

But even in paradise, there can be trouble. In the 1950s, France was torn over the liberation of Algeria, a French colony. The conflict was less about race than Algerian independence, which was eventually achieved in 1962. Still, it reminded Larry Potter of racial problems in the States. He organized a protest march to the American Embassy in support of civil rights.

In the mid-1960s, after a group exhibition with other African-American artists in Copenhagen, Potter's potential was cut short by a fatal asthma attack. He was only 40. Throughout the years, Nicole Toutain lovingly stored his paintings. She believed—rightly, it turns out—that, someday, they would be seen by a larger audience.

The two women in the Studio Museum exhibit did not meet the others, or each other, in Paris. In the '30s, Lois Mailou Jones was adopted by two French families who helped her perfect her accent and taught her how to cut up spinach very fine and then cook it with herbs. "They extended so much love," she says; "I was fully accepted." After the war, she spent many summers outside Paris and in southern France with her late husband, a graphic designer for the World Health Organization. When she turned 90 last November, she received a congratulatory call from Herbert Gentry, age 76.

After Barbara Chase-Riboud arrived in 1961, she worked briefly as art director at the *New York Times* Paris bureau. Soon she had her own studio in the Loire Valley, where she created her sculpture, abstractions cast in bronze, sometimes incorporating silk cords. Chase-Riboud, who has also written poetry and historical novels, currently has three exhibits of her work traveling in the United States. She is now working on a sculpture commissioned for the African Burial Ground in Manhattan's Foley Square. "Who can predict the curve of a life or where it will be lived?" asks Chase-Riboud, who moves between Paris and Italy with her husband, an art publisher.

Three years ago, the Studio Museum celebrated its 25th anniversary; the museum staff is proud of that milestone, as well as the new $1.6 million sculpture garden, which took ten years to build. It is also very proud of this show. "From Impressionism to Surrealism to Abstraction, the seven artists in our exhibit let us see how Paris allowed them to develop," says curator Valerie J. Mercer. "Their years in France fortified them when they faced obstacles later in the States."

"Everyone matters; there's pain in a segregated world," adds director Kinshasha Holman Conwill. The Studio Museum, she believes, proves that a national—and international—audience can be reached with exhibitions such as "Explorations in the City of Light." Her keen eyes bring to mind the words of James Baldwin, who stated, "The challenge is in the moment, the time is always now."

TECHNOLOGY UPDATE

Experience the benefits of technology... *at home!*

Where is the first place you'd expect to encounter technology? In the past, your answer would probably be "at work." Technological advances have long been simplifying our lives at work: computers, fax machines, E-mail...the list goes on.

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Alpan's industrially-proven solar technology harvests the power of the sun to protect your home and family.

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2. Silicone-encapsulated solar cell
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Fluorescent advantage. Using a four-watt fluorescent bulb, the new Solar Pagoda Light provides the maximum amount of illumination while operating on a minimum amount of energy.

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State-of-the-art. Alpan lights use a *single crystal cell,* the same cell found in industrial power modules. Energy collected from the sun by the cell during the day charges the power source. A built-in photo sensor detects darkness, automatically turning the light on to provide up to five hours of illumination.

No bills, no wires. You can install the Solar Pagoda Light in minutes. Snap the mounting poles together—you can choose the height of the poles, from eight, 13 or 21 inches. Then just snap the light onto the pole and insert it into the ground. All of the connections are internal, so the lights are totally wireless. And because they store and use energy from the sun, you'll never pay for outdoor lighting.

Solar Sensor. The Solar Sensor Light uses the same technology to provide extra protection for your home. This powerful floodlight illuminates your yard with a quartz-halogen bulb. Its built-in motion and heat sensor turns the light on and keeps it on for 30 or 60 seconds after motion is detected.

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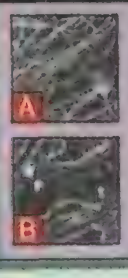

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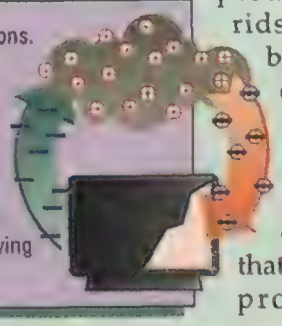

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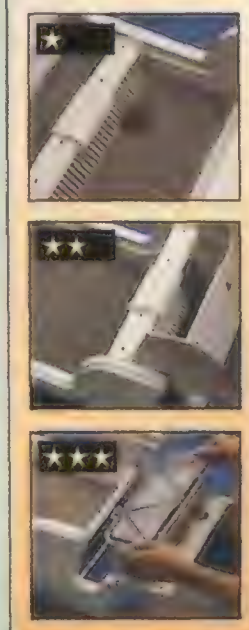

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By Eric Lawlor

His name meant "Father Turk," and that he was

Almost overnight Kemal Ataturk banned the fez, secularized the state, gave women the vote and set Turkey on a course toward the West

Turkey's teahouses are charming places. Plane trees shade small tables set along white walls. Men play backgammon or huddle over water pipes. Steam rises from boiling samovars. The tea doesn't vary, either: amber in color, it's served in small, tulip-shaped glasses resting on saucers painted red and gold. Most of Turkey's teahouses have something else in common—a picture of Kemal Ataturk, the father of modern Turkey. In this, they are not unique. There are portraits of Ataturk everywhere you go in Turkey. Young Ataturk, old Ataturk, Ataturk in middle age. Ataturk the teacher, the soldier, the statesman. Ataturk in tweeds. Ataturk in flannels. Ataturk in a top hat. In homes, shops and universities; in restaurants, offices and banks, this man, though dead more than 50 years, is still very much a presence.

His name speaks volumes. In both Arabic and Turkish, "Kemal" means "perfection." It was a name that was conferred upon him at military school in 1893 because of his command of algebra. He was just 12 years old. "Ataturk," the name he took in 1934, means "Father Turk," no less. For most of his life, he viewed his people as his children. Asked once why he rarely smiled, he replied, "Isn't modernizing a nation a serious business?" But Kemal Ataturk never doubted he was up to the job. In 1923, when he founded the Turkish Republic, his country was mired in the Middle Ages. Muslim clerics, wielding authority said to come from God, dominated the customs of the country. Under the tutelage of a tottering sultan, and a caliph who was the heir of the Prophet Muhammad as temporal and spiritual head of Islam, the clerics had run most of the schools and some of the courts, as well. Legal disputes involving such matters as divorce and inheritance were referred to these religious courts, governed by precepts formulated 1,300 years before, in the time of the Prophet. Women, in general, had few rights, received limited schooling, could not vote and were not supposed to appear in public with men, even their husbands.

Powerful leaders used to be called "makers of history"; few so obviously deserve the title as Ataturk. Between 1923 and 1938, the year he died, he made this mostly Muslim country into a largely secular state, modeled on the nations of Western Europe. History has seen no national transformation swifter or more dramatic. In a little more than 15 years, he tried to accomplish the work of centuries.

He abolished the sultanate in 1922 and, a year later, exiled the caliph, took education away from the clerics and closed the religious courts. The effect of these measures was to separate church and state, something that had never happened before in western Asia. He banned the fez, which had become a symbol of Ottoman and Islamic orthodoxy, adopted a modified Latin alphabet, outlawed polygamy and championed equal rights for women. It's largely because of Ataturk that, today, Turkish women have made their mark in medicine, law, even politics. Though her political future is currently in doubt, Tansu Ciller, Turkey's bright, forward-looking prime minister, has been one of only a handful of women to head a government anywhere.

It is safe to say that without Ataturk there might not be a Turkish nation. It was he who extricated it from the wreckage of the Ottoman Empire and World War I, in which Turkey unwisely sided with Germany. When the war ended, the victorious Allies seemed bent on dismembering not just the Ottoman Empire, but its predominantly Turkish provinces, too. The Ottoman Turks had occupied Greece and parts of southeastern Europe for centuries. But under the Treaty of Sèvres, signed by representatives of Ottoman Turkey and the Allied powers (with the exception of Russia and the United States), Turkey was to consist only of Istanbul and parts of the Anatolian peninsula. Greece, with British encouragement, laid claim to all parts of Turkey in Europe and a good deal of western Anatolia as well.

The treaty required Ottoman forces to lay down their arms, and it was to expedite this process that the sultan, by then under the thumb of the Allies, sent Ataturk to Anatolia in 1919. But Ataturk, then Inspector-General

At the height of his power and popularity, Ataturk stares from the window of a train bearing him to Ankara.

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Mustafa Kemal, disobeyed orders. Instead of disarming Turkish soldiers, he reorganized them and repaired to the remote eastern Anatolian city of Erzurum, intent on organizing nationalist resistance to both the sultan and the Allies. The angry sultan ordered Ataturk to return to Istanbul. "I shall stay in Anatolia," came the reply, "until the nation has won its independence." Then he moved west, convened a parliament, set up a rebel government in Ankara (Turkey's present capital) and launched an assault on the Greek armies occupying western Anatolia.

As a daring field commander, he had three times helped deny the Gallipoli Peninsula to the Allies in 1915. Now, in September 1921, he proved his audacity once again. At the Sakarya River his forces dealt the Greeks a decisive defeat in one of the longest battles in history. The two armies fought along a 60-mile front for 22 days and 22 nights. Greeks outnumbered Turks three to one but were short of food and water.

By the fall of 1922, with 50,000 men, no tanks and only a few rickety biplanes, Ataturk's army had driven the Greeks out of Anatolia and had persuaded the Allies to withdraw most of their forces and territorial claims. For his pains, Turkish nationalists named him Gazi, meaning "conqueror," or "one who fights on behalf of Islam."

It was as the leader of his countrymen by popular acclaim that he abolished the sultanate. He intended to exile the sultan, but in the end he didn't have to. The old man, afraid that an overzealous nationalist might kill him, persuaded the British to help him leave the country. One wet November morning the sultan assembled an entourage of ten, including his son, his doctor, his bandmaster, two eunuchs and a barber. (His five wives would follow later.) At 6 A.M., the party slipped into two British ambulances and headed for the Bosporus, where a battleship, HMS *Malaya*, was waiting.

As an Ottoman officer, Ataturk won fame by beating British at Gallipoli.

A year later, Ataturk gave the caliph, Prince Abdul Mejid, less than 12 hours to pack his bags. After bidding farewell to his harem, the caliph was bundled onto a train bound for Switzerland. At the Swiss border, another indignity awaited. He was a polygamist, Swiss officials explained, and as such could not be allowed to enter the country. In the end they relented enough to issue him a temporary visa.

Having driven out the Greek invaders, abolished the monarchy and broken the official power of Islam, Ataturk set to work in earnest. As he saw it, to make progress Turkey either had to emulate Western Europe or be dominated by it. He wanted to make the country as liberal as he could; he wanted to make it "modern," a word he used often. One day an exasperated cleric demanded to know exactly what the word meant. "It means being a human being," said Ataturk. So great was his passion to emulate Western ways that enemies used to joke about it. The country was lucky, they said, that he hadn't forced Turks to learn French or convert to Christianity.

Some reforms had been attempted in the past. What made the difference now was the tenacity, ruthlessness and enormous prestige Ataturk brought to implementing them. As early as 1922, he had created a national assembly,

Tansu Ciller, prime minister since 1993, favors ties with the West.

and this institution declared Turkey a republic with Ataturk as president in 1923. This change was affected with little opposition because of Ataturk's reputation, won at Gallipoli and burnished during the war of independence. At Gallipoli, when he'd been struck in the chest by shrapnel, the watch in his breast pocket was shattered, but Ataturk came away unharmed. Many of his countrymen drew their own conclusions: he was divinely chosen to lead his people.

This was ironic because Ataturk was not merely an agnostic, he regarded Islam as inimical to progress. It is said that in a fit of temper, he once threw a Koran at one of Turkey's top clerics.

Ataturk gave Turkey a republican constitution. People now voted, and laws were debated and passed by the national assembly. But there was really only one party—the People's Republican Party, which would dominate Turkish politics until long after his death. In economics Ataturk's programs aimed at nudging a mainly agricultural economy toward manufacture. He encouraged business with government loans, as well as a measure of state planning and the establishment of some state-owned industries.

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But he left the details to his able prime minister, Ismet Inonu, who served as the country's leader for 12 years after Ataturk's death.

In pursuit of projects that interested him—education, social evolution, the changing of popular attitudes, the eradication of religion from politics—Ataturk was incredibly tenacious. No detail escaped him, and he was prepared to use charm, cajolery, intimidation, even outright coercion. Though he kept the army small—to save Turkey money—and enjoyed wide public approval, he ruled imperiously. With the caliph gone, Ataturk declared an all-out war on "the forces of superstition." He closed the religious schools and replaced the holy law with a civil code borrowed in part from Switzerland. For the first time in their history, Turks enjoyed legal rights similar to those of Western Europeans.

"Islam's great iconoclast," as Arnold Toynbee once described him, Ataturk also turned his wrath on what seemed an unoffending target: the fez. The fez had been worn in Turkey for about a century, but in that time Turks had come to think of it and Islam as synonymous. By rejecting one, you were rejecting the other.

"If we will be a civilized people," said Ataturk, "we must wear civilized international clothes. The fez is the sign of ignorance." Starting in 1925, he decreed, Turkish men would be required to discard the fez and wear Western hats instead. That was easier ordered than achieved, even for a national hero turned benevolent dictator. The very word "hats" was explosive in Turkey—hats being associated with infidel customs. For years, not daring to use the "H" word, the press had referred to all hats, except the fez, as "head cover with a brim," or "protector from sunshine." In his book *The Ataturk I Knew*, journalist and politician Falih Rifki describes his terror when, as a small child at the turn of the century, he first saw a hat at close quarters. It belonged to a foreign doctor visiting his father, and as he looked at it, Rifki recalled, "it seemed to have eyes and ears and a voice, like the head of a demon. When the doctor left, our maid, a devout Muslim girl, purified the place where the hat had stood, with boiling water and incantations."

Before banning the fez outright, Ataturk devised ways of making the hat less of an object of fear. He added a small brim to the headgear worn by the army. (To keep out the sun, he said.) He ordered all civil servants to wear hats to work. (Some resigned rather than comply. Ataturk retaliated by stopping their pensions.) He had the national press run stories extolling the hat's virtues. Follow-ups dealt with hat etiquette: how to wear and care for a hat, and precisely how high it should be raised when greeting someone.

In 1935 Ataturk addresses the Congress of the People's Republican Party, the only party that wielded real power during his regime.

Once the ban became law, any man found wearing a fez risked a penalty or jail. Naturally, the demand for hats grew, supplies ran out, prices soared. Desperate men settled for anything with a brim—bowlers, boaters, fedoras. Some even wore women's hats. Particularly for the old, renouncing the fez was sacrilege. Many tried wearing a handkerchief under the hat. That way, they reasoned, the hat wouldn't actually touch their head. The hat law was far from Ataturk's most important reform, but it stirred the most publicity and passion. Riots broke out in eastern Turkey. Officials trying to enforce the law were stoned. Resistance quickly ceased when Ataturk sent in special tribunals and troops.

For the most part, he dominated his countrymen by the power of his will and the force of his personality. Physically he was slight, with thin lips, blue eyes and massive eyebrows that made him look dramatic. He claimed to be indifferent to luxury. All he needed in life, he said, was "a piece of bread and to be able to eat and drink with friends." But he took pains with his appearance and ordered his suits from London's Savile Row. For recreation, he listened to jazz, played cards, pursued women and read futuristic novels by H. G. Wells. He was also a great talker. Addressing a party congress in 1927, he spoke for six days, six hours a day.

Ataturk was also a believer in the civilizing powers of the fox-trot. In 1925 he gave Turkey's first ball, attended by the country's top officials and by their wives. Until then Muslim couples had rarely been seen together in public. Soon Ataturk was urging towns all over Turkey to open dance clubs. One such club, short of women, had to advertise for them. Applicants, said the ad, should be able to play a musical instrument and speak without stuttering.

As engines of change, the dance clubs seem fairly frivolous. But all Ataturk's innovations, however small, contributed to his grand design. In his speeches he now began to stress the rights of women. This was radical. In much of Anatolia, women were consid-

ered inferior to men. To Ataturk this was nonsense. Women were entitled to the same opportunities as men, he insisted. If anything, their schooling was more important than men's, because when you educated a woman, you educated an entire family. Little by little, barriers fell. Women voted in local elections in 1930 and in national elections in 1935. Seventeen deputies in the new Grand National Assembly that year were female.

Politically, Ataturk thought like a reforming Westerner. In personal temperament, he was quite different. Just months before his new civil code made easy divorces illegal, he divorced Latife Hanim, his wife of two and a half years, the Muslim way—by simply announcing he was done with her. He had known her for less than five months when he proposed. They were married within days in the European style. According to a contemporary account, Latife's disarming black eyes had "accomplished what the whole Greek army could not—the subjugation of the Turkish Commander-in-Chief." But the more she tried to run his life—and, particularly, control his dangerously heavy drinking—the more he resisted. She was as egotistical as he and spoke of them as "Napoleon and Josephine," a comparison Ataturk objected to. Although he admired Napoleon as a general, Ataturk felt that, as a man, Napoleon had put his own interests above those of France.

Latife hated her husband's drinking cronies—whom she rightly saw as sycophants—and took special pleasure in belittling them. She was also madly jealous. Once, at a lunch—the first at which men and women had sat down together in the conservative city of Erzurum—she made a scene because Ataturk was paying too much attention to an attractive woman. Within months he divorced her.

While Ataturk was establishing rational reforms—economic, religious and social—that were changing Turkish

Eric Lawlor is the author of Looking for Osman, *a traveler's memoir about the paradoxes of life in modern Turkey.*

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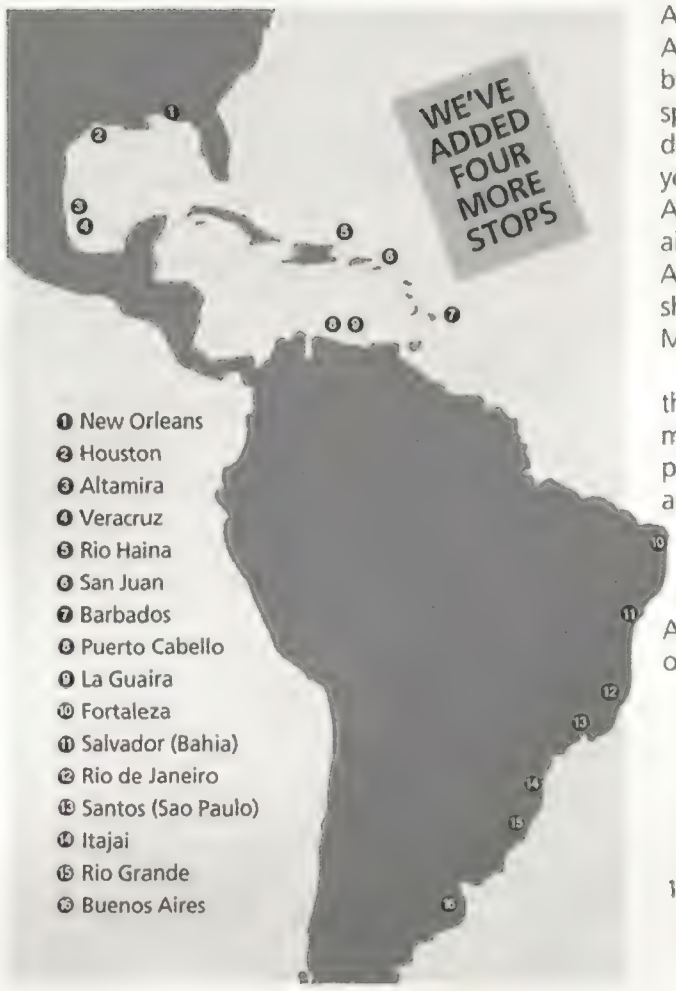

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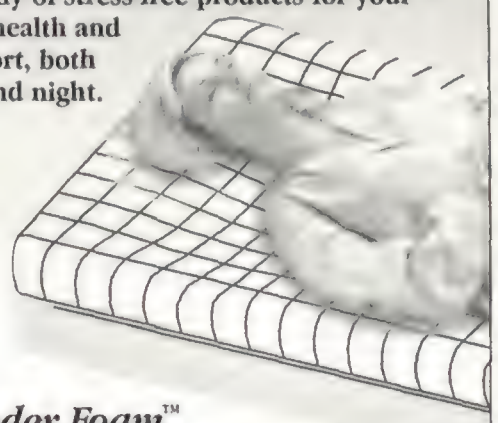

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Ataturk banned the fez and promoted Western hats; here he boasts a topper.

life out of all recognition, his own life grew more disordered. He battled insomnia, became depressed, grew unbearably cantankerous even for a despot. By the mid-1930s he was carousing all night, dancing, singing, and boasting of his sexual conquests. For all that, women still seemed to find him irresistible. One lay down in front of his car, it was said, daring him to run her over. Ataturk took her home instead. She was one of many, so many, that men, when they came to Ankara, often took the precaution of leaving their wives at home. Turkey, however, remained his one great passion. He believed that he, and only he, knew its real interests; he, and only he, could make it prosper. "I am Turkey," he said once, sounding a little like Louis XIV.

As early as 1925, enemies plotted to kill him. One of the ringleaders, an adventurer named Ziya Hurshid, proposed throwing a bomb at the president during a session of the national assembly. Fellow conspirators shook their heads. Well, then, he'd shoot Ataturk—through a hole in the roof of the assembly building. In the end, hired assassins were scheduled to ambush Ataturk when he visited Izmir on

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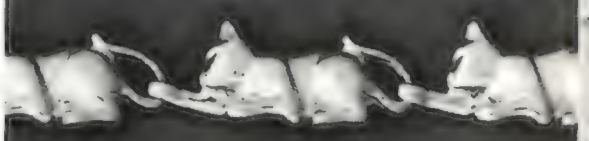

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June 18, 1926. As it happened, the president's arrival in Izmir got delayed. Panic-stricken, the plotters thought their plan had been discovered and one turned informer. The plot involved only a handful of conspirators, most of them comically inept. But Ataturk, seeing a chance to be rid of his critics, cast it as a major national conspiracy.

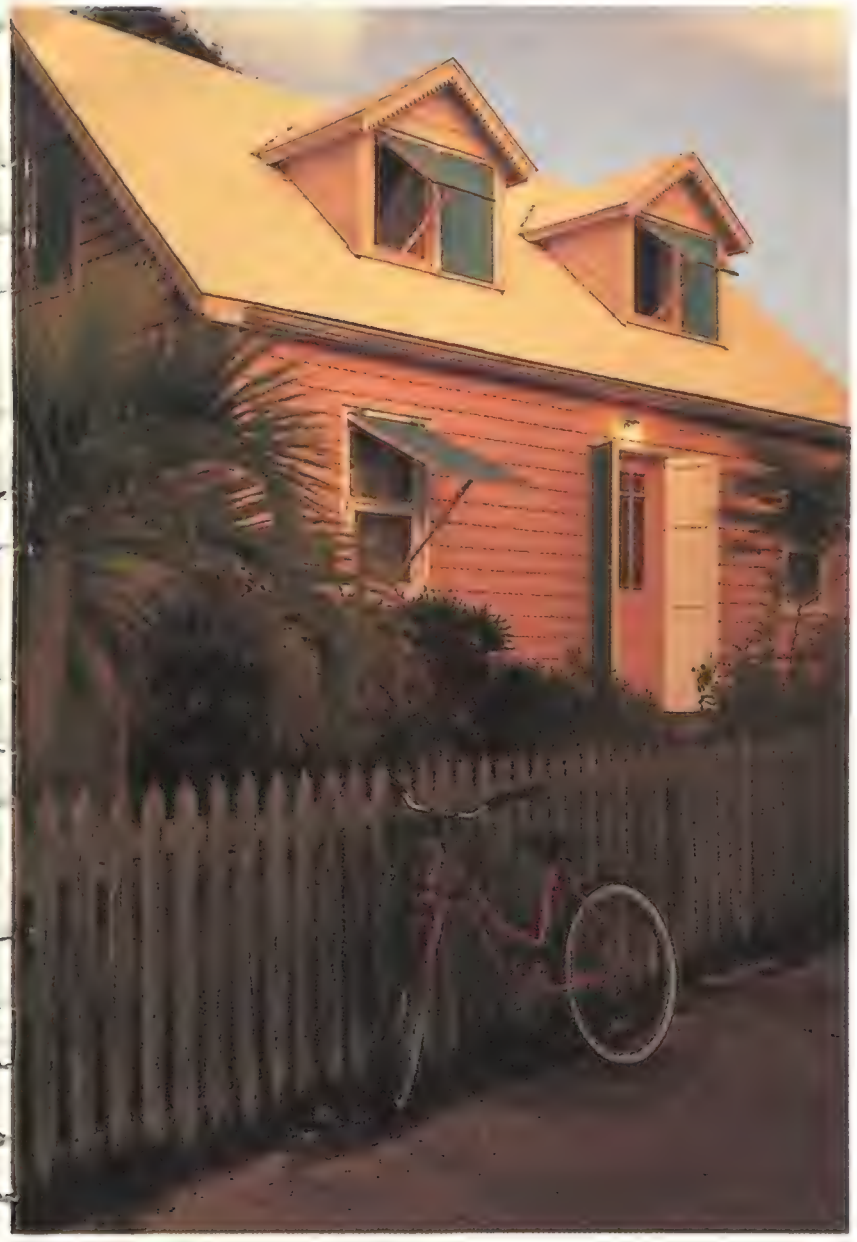
The case went to a specially created "Independence Tribunal"—a grandiose name for what, in effect, was a hanging court. Dozens of people were arrested—among them 25 deputies theoretically protected by parliamentary immunity. The trial was a travesty. Defendants appeared without counsel and were not allowed to appeal their sentences. A number were executed.

The Izmir conspiracy wasn't the only challenge used by Ataturk to stifle opposition. Kurdish rebels had risen in the east, demanding restoration of the caliphate and an independent Kurdistan. One of their strongholds was Dogubayezit, a dusty little town not far from the foot of Mount Ararat. Except for their fundamentalist beliefs, the defeated rebels posed little real threat. But Ataturk showed no mercy, and Dogubayezit was destroyed. Some 40 of the Kurdish leaders were charged with treason and hanged.

This did not solve the problem. Turkey today has ten million Kurds; the demand of many for independence now threatens the stability of the Ankara government and clouds the political future of the entire country. (It was to destroy Kurdish guerrilla bases that 35,000 Turkish soldiers invaded northern Iraq last year.)

Many Kurds today would settle for cultural autonomy within the Turkish state. But in the tradition of Ataturk, Ankara has been reluctant to grant even this. To force the Kurds to assimilate, the government for years denied them the right to speak their own language in public or to study their history. They were also forbidden to sing Kurdish songs. They can now speak and use Kurdish but are forbidden to form ethnic associations or to use their language on radio or television. To do so is to be guilty of "separatist propaganda."

Through the years, Ataturk became increasingly overbearing. Disagree with anything he said and he became enraged. He complained about being bored. For something to do, he turned his attention to the Turkish alphabet. For centuries, Turkish had been written in Arabic script. Adopted for religious reasons, it was a script few Turks could read, let alone write. By one estimate, 80 percent of the population in 1925 was illiterate. Ataturk proposed to change that by having Turks switch to Latin characters. "The Turkish language has been a prisoner for centuries," he wrote. It was time "to cast off its chains." He named a commission and gave it two tasks: draw up a



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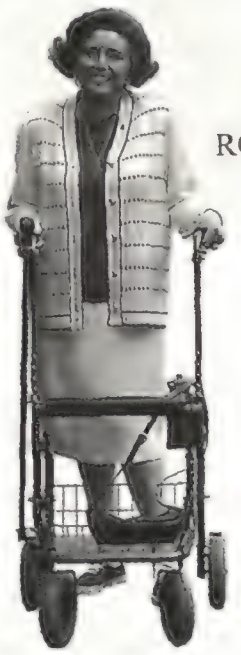

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new alphabet and devise a way to phase it in. But first he had a question: How long was the changeover likely to take? Five years, said the commission. Too long, he said. "The change will happen in three months or it will not happen at all." Working day and night the commission produced an alphabet in just six weeks.

In November 1928, after the national assembly predictably made the new alphabet law, Ataturk set to work. Brilliant at carrot-and-stick manipulation, he gave civil servants an ultimatum: master the Latin characters or look for another job. He invited government officials to his home and made virtual prisoners of them until their upstrokes and downstrokes met with his satisfaction. He made everyone under the age of 40 enroll in literacy classes. Prison inmates able to show they could write got their sentences reduced.

He toured the country with chalk and blackboard and delighted peasants by teaching them to write their names. His enthusiasm galvanized Turkey. Banks, police stations, stores, post offices, cafés, ferries, streetcars—all became impromptu classrooms. The new alphabet was posted on street corners. Shop windows displayed the new characters. In the evenings, couples frequented the English cemetery in Istanbul, drawn by the tombstones with their Latin inscriptions.

Ships were the first to paint out the old letters, then trains, then trams. Of course, there were dislocations: in 1929, for want of proper type, only one book was published in Turkey, and some newspapers, unable to afford the new characters, went out of business. But only two months after becoming law, the new alphabet was in general use, and in less than a year, more than one million people had been taught to read and write it. By 1931, the Arabic script had all but disappeared from official use.

In 1935, Ataturk introduced what was to be his last reform, the surname. Until then, a Turk had only one name—the one he was given at birth: Selim, say. Or Selim, son of Ercument. But in a country full of Selims, Ercuments and Mustafas, all this created confusion. Ataturk's solution was simple: Turks would follow Europe's example and adopt family names. This was when he chose "Ataturk," becoming Kemal Ataturk.

In 1936 his phenomenal energy began to fail. His memory deteriorated, and he complained of constant pain. Years of heavy drinking had taken their toll. Early in 1938, he was diagnosed as having cirrhosis of the liver. He moved from Ankara to Istanbul's Dolmabahce Palace and spent much of his time in bed. In the sweltering summer heat, firemen hosed down the front of the palace "to keep the Gazi cool." On November 10, 1938, at the age of 57, he died. A grief-stricken aide promptly committed suicide.

Ataturk's death stunned Turkey. Tens of thousands filed endlessly past his embalmed body in the palace's throne room. At Izmit his ebony coffin was placed on a special train for Ankara. Night had fallen, and it was fiercely cold as Ataturk crossed Anatolia for the last time. But at every town and village along the route, peasants lined the track, waving torches as he passed and setting bonfires, lighting a path for

During a brief, stormy marriage he strolls with his wife, Latife Hanim.

him as he made his way to Paradise.

Was Ataturk good for Turkey? Religious fundamentalists regarded (and continue to regard) his secular reforms as "infidel innovations." But if you believe in the Western idea of what constitutes progress, there's no doubt that the changes he set in motion—in Turkey's laws, its political system, its very culture—broke the country's inertia. When most dictators die, they tend to be reviled; Ataturk is still much loved. After his death, too, power was peacefully passed on without political dislocation. Turkey, it turned out, hadn't just joined the 20th century; as Ataturk wished, it had managed to join Western Europe. In World War II, though very late, it sided with the Allies. It became a founding member of the United Nations and, in 1952, joined NATO. During the Korean War, Turkish soldiers, often praised for courage under fire, fought alongside American and other U.N. troops.

He was a dictator, yes. He was also a benevolent reformer with a special gift for making believers out of skeptics. Though he was chosen president by the national assembly, had he ever run in a general election, he'd have won easily. He espoused the procedures of democracy but was wary of them. "Liberty is like fire," he once said. "It's beneficent if controlled; [but] abandoned to itself, it burns and destroys."

He had the resources to be an out-and-out tyrant, with an army all too willing to do anything he asked. But unlike his contemporary Joseph Stalin, then also remaking a "backward" country, he rarely resorted to force. After two years of repression, he abandoned the infamous Independence Tribunals. Turkey didn't have an elaborate internal security apparatus, and there were no "reforms" that killed millions of peasants, as in the former Soviet Union. There were no concentration camps. And once the special tribunals had been disbanded, there were no show trials, no purges that exiled or murdered hundreds of thousands of people.

While many of those around him

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A tireless reformer, Ataturk tours villages teaching the new alphabet.

lined their pockets, he didn't enrich himself as head of state. Aside from a small government salary, he profited little from his years in office. When he died, he was only slightly better off than he had been in 1923.

When you change a society, there are losses as well as gains. Ataturk's opposition to Islam in all its forms now seems extreme. Moderate Muslims point out that the Koran is broad and various in its teachings, and that declaring war on its influences involves cutting off a source of wisdom, of cultural and spiritual strength.

"Do your best to live long," a friend once urged Ataturk. "The day after you die they'll smash all your statues." "They" were the Islamic fundamentalists, and they didn't smash his statues. Not then, anyway. For more than 40 years after he died, Kemalism, as Ataturk's reforms are called, remained Turkey's basic policy. It was only a decade ago that change began to set in. Starting in the early 1980s, the army, to offset the growing influence of the left, began to encourage an Islamic revival. The revival grew to the extent that Muslim fundamentalists

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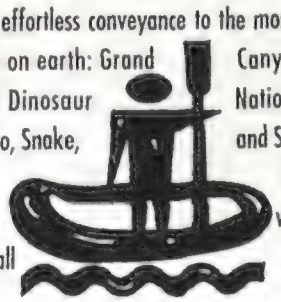

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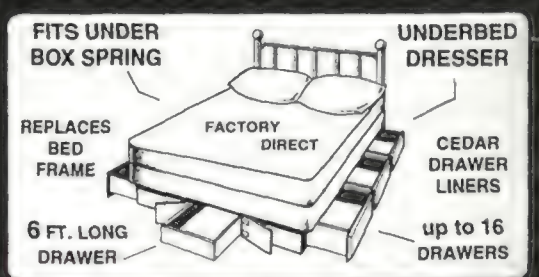

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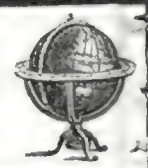

today threaten Turkey's secular policies, most notably the separation of church and state.

In the elections last December, the pro-Islamic Welfare Party, whose goal is a Muslim-run state, won 21.4 percent of the vote—a plurality. As a result, Party leader Necmettin Erbankan tried to form a workable coalition government with Turkey's other major parties—including Motherland and Tansu Ciller's True Path. The attempt failed. Then Ciller, as the caretaker prime minister, tried to do the same thing. Political negotiations continue, with the long-term outcome still in question.

Ciller's party attributes the gains of the Welfare Party to the poor state of Turkey's economy. Citing Ataturk's continued prestige—all those pictures included—officials say the answer to the country's problems is more, not less, Westernization. A notable step in that direction came last December when the European Union signed a customs union agreement with Turkey. Meanwhile, his reforms once more challenged by Islam, Kemal Ataturk looks down on his people from a multitude of images.

A sculptor puts the finishing touches on a monumental, frowning likeness of Turkey's larger-than-life leader, a champion of equal rights for women.

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Book Reviews

Notes from the Shore
Jennifer Ackerman
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If we look at anything long enough, with enough attention and persistence, we are apt to see ourselves. Jennifer Ackerman's *Notes from the Shore* is a book of essays describing her forays along the Delaware shore at Cape Henlopen; through her eyes we see an immense variety of living things formed and shaped by such forces as the action of waves and the upheavals of geologic time, and yet the book is also a self-portrait. The author casts the wide net of her attention over horseshoe crabs and shorebirds, whales and mosquitoes, and as the net is drawn in, the gift of her writing is not the ordered nature of science but a more personal account of discovery and contemplation. "It's in our nature to see order," she writes, "and when we don't see it, to try to impose it. We have to put things through our minds to make sense of them, and our minds crave pattern and order. So maybe what we glimpse is only what we desire. . . ."

Ackerman's glimpses of the Delaware shore are full of the kind of fascinating detail that makes good nature writing as engaging as any fiction. And her insights lead us to see more deeply into this land's-end habitat than we might by traversing it alone. I've seen fish at my feet before, for example, but I'd never heard them. "As the sea travels over the ribbed bottom of the flats," Ackerman observes, "fish move in from the deep, dissolving in and out of sight around my feet. Though they seem mute, they are not. They fill the waters with belches and cries, calls of courtship, alarm, aggression, and fright. A researcher . . . once auditioned every species of North Atlantic coastal fish she could collect

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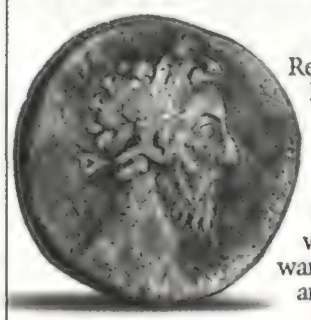

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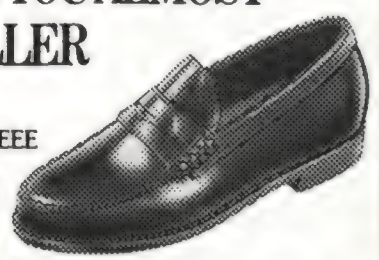

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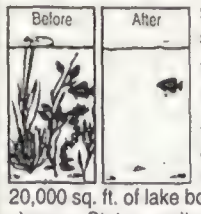

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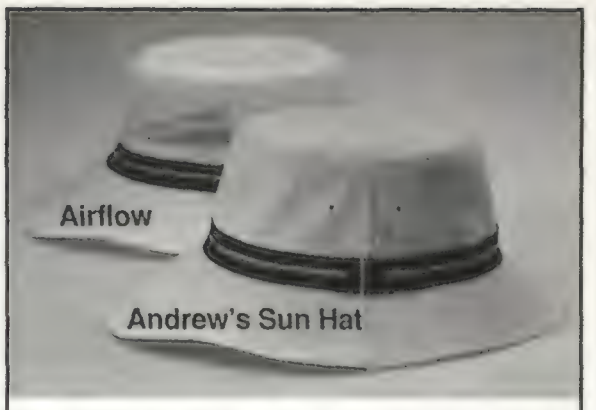
Although there is a mass of information in these pages, Ackerman is more interested in stories and scenes than in data. She takes us, flashlight in hand, to a moonlit beach to watch the annual coupling of horseshoe crabs. "Each female lays thousands of eggs in several nests," she notes, and uses the scene to sketch in the evolution and ecology of these ancient creatures; to digress on the migration of shorebirds that feed on their carcasses after a storm; and to speculate with Saint Thomas Aquinas on the nature of angels' time as having a beginning but no end—"This notion might hold for the way horseshoe crabs occupy time, these creatures so durable that they antedate most other lifeforms, so adaptable that their survival as a species may, for all we know, approach eternity."

The speculation is more intriguing in light of the number and variety of species that gorge themselves on the horseshoe crab's eggs. Migratory sanderlings, before a 2,000-mile flight to their own Arctic breeding grounds, eat about 9,000 a day for two or three weeks. Ten other species of shorebirds feed on them, Ackerman tells us, "along with sparrows, mourning doves, cowbirds, common grackles, pigeons, and three kinds of gulls. Turtles prey on them, and mice; so does the raccoon, who steals down through the dune grass to dig them up. Eggs caught in the receding waters of the tide are snatched up by crabs, eels and minnows. Mollusks scavenge those that drop to the bottom. Nematode worms parasitize the egg clusters. The loss is enormous, but somehow [the horseshoe crabs] keep ahead of the slaughter."

Notes from the Shore includes musings on crumbling lighthouses, shipwrecks and herculean government projects to build seawalls or drain mosquito-breeding salt marshes with ruler-straight ditches. Ackerman also touches on the effect of contemporary problems—toxic wastes, global warming and shoreline erosion—on her habitat. There are personal notes, too; the family memories and feelings that shape an observer's perspective. If "what we glimpse is only what we desire," Ackerman proves her-



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self an observer with a very open mind and heart.
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A Field Guide to Germs
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A Field Guide to Germs is the kind of catchy title that brings to mind all sorts of offbeat images—a pith-helmeted scientist peering into a microscope, amateur naturalists afield looking through very large magnifying glasses, or groups of odd-looking organisms leering at an open book, making rude comments about cilia or pseudopods.

But while this book has a lighthearted title, the things it catalogues aren't funny at all. In 70 brief, alphabetically arranged entries, Wayne Biddle describes the causes of literally billions of deaths and endless human misery. Splitting headaches, diarrhea, fevers, rashes, coughing, cramps, paralysis, blindness, bleeding, ruined joints, wasted muscles appear on every page, along with bleak statistics of infections and deaths. Fortunately, Biddle manages to make mayhem so interesting that we read on, avidly.

A surprising number of the diseases Biddle describes are preventable or treatable. Malaria, a periodic fever afflicting some 400 million people, causes between one million and three million deaths per year. Although it has been almost eradicated in Europe and the United States, malaria remains common in Asia and South America, and in tropical Africa it is out of control. Measles vaccinations are cheap and effective, yet "about a million people, mostly children, die every year around the world" from this disease. Hepatitis A thrives largely "wherever sanitation and hygiene are poor"; a new vaccine is available to prevent it. Even the kinds of sexually transmitted diseases that can't yet be cured, like HIV, herpes and the papilloma viruses, can be prevented by a few changes in behavior.

Another group of illnesses, though widely feared, are extremely rare. Botulism, caused by a toxin produced by the *Clostridium botulinum* bacterium, never accounted for more than about 35 incidents per year in the United States. Those numbers peaked in the 1930s. Tetanus (117 cases in the United States since 1989-90) and rabies (20 confirmed American cases since 1980) have similarly inflated reputations as dangers.

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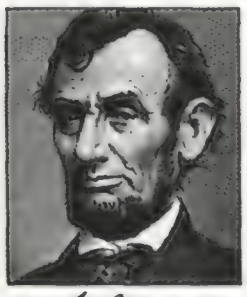

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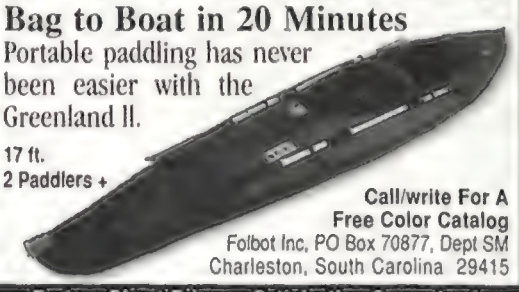

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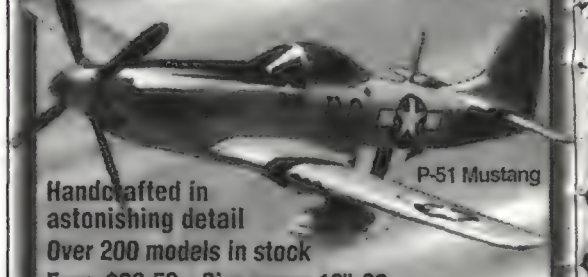

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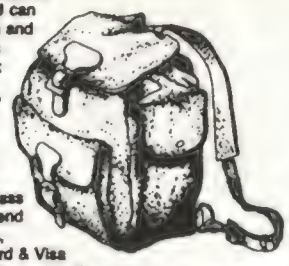

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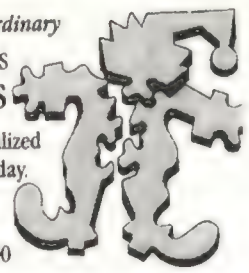

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It is the mysterious, however, that most people fear, and Biddle's list of strange diseases named after the places they were discovered is enough to make readers turn in their passports. The insect-borne arboviruses (the name describes *ar*thropod-*bo*rne viruses), and rodent-borne arenaviruses and hantaviruses, sound especially frightening. Junin, Lassa and Mapucho hemorrhagic fevers are caused by arenaviruses carried by bats, rats and mice. Rocky Mountain spotted fever reaches us through ticks, and mosquitoes are the agents of yellow and dengue fevers, malaria and several kinds of encephalitis.

Every book of lists inspires readers to look for what's missing. Dental caries, gangrene, gingivitis and sleeping sickness could merit mention. Biddle might have included entries on Chaga's disease, a tropical American trypanosomal illness transmitted by a critter called an assassin bug, which may have afflicted Darwin, and kuru, a disease from New Guinea that was associated with cannibalism and is now apparently extinct. None of these omissions, however, represents a serious problem. Thousands of germs prey on human beings; any guide is allowed to select which of that army to include.

The choices covered in this guide always seem to do two things. First, each offers Biddle the chance to say something interesting or show an intriguing picture, presenting some tidbit about a symptom, statistic, scientist or victim that makes even the most obscure organism seem somehow familiar. Second, each topic lets Biddle reinforce one of the themes running through his book.

For middle-class Americans, he points out, most diseases are avoidable. Get your shots. "Drink the beer and ask for 'well done'" when traveling overseas. Wash your hands, keep the kitchen clean and practice safe sex. He stresses that mankind's less fortunate, often blamed for harboring or spreading diseases, suffer disproportionately from the miseries he catalogues. "Poverty has always put people in harm's way." Finally, he emphasizes that "medical diagnosis is not for hobbyists." Biddle offers this guide "as a bulwark against phobia." Writing with humor, good sense, wisdom and style, he has produced an excellent introduction to mankind's potentially harmful microscopic companions.

John R. Alden is an anthropologist and writer living in Ann Arbor, Michigan.

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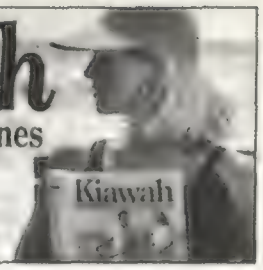

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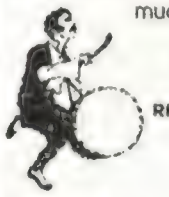

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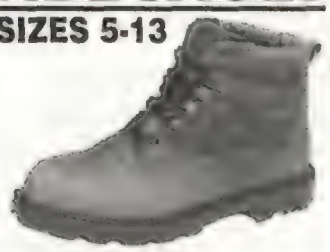

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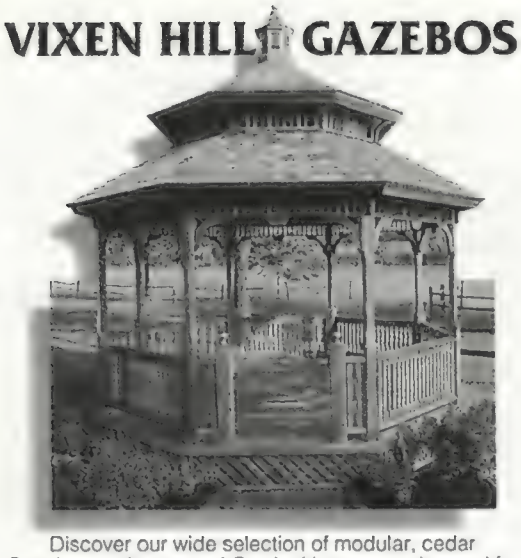

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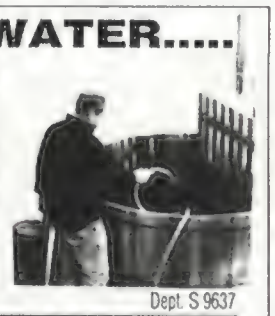

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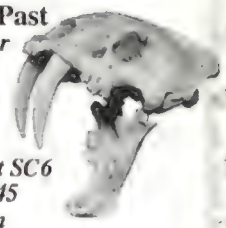

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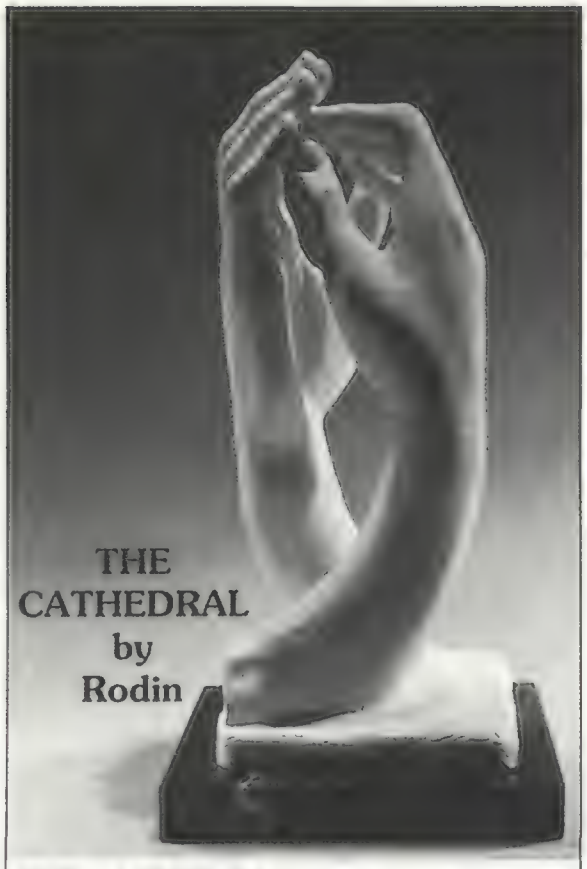

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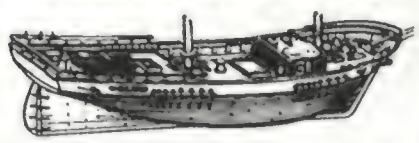

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By Joseph F. Wilkinson

What's in a name? Just ask King Fisher, Robin Banks and Minnie Vann

I first became interested in memorable names—names that stand out, that draw immediate attention—while listening one day to the overture to *The Barber of Seville.* I wondered if there was a woman somewhere named Barbara Seville. It seemed so right. It also occurred to me that there ought to be someone named Gloria Monday, as in *sic transit. . . .*

Recently, I found that my library has the residential telephone directories of the United States on CD-ROM. I discovered that there actually is a Barbara Seville, and she lives in Twin Falls, Idaho. And, to my joy, I found two Gloria Mondays, one in Cocoa, Florida, and one in New York City.

An electronic treasure chest had been opened for me. I felt in this great country there should be a woman named Rosetta Stone. I found five of them (Portland, Oregon; Morris Plains, New Jersey; Ellicot City, Maryland; Miami, Florida; and Leavenworth, Kansas). Probably they are daughters of archaeologists, linguists and historians.

A memorable name is a head start in life. It gets noticed and remembered and, therefore, is an advantage that parents can confer on a child at no cost. But it isn't available to everyone. To achieve a memorable name, you've got to start with something that has possibilities. For instance, if your last name is Banks and you call your daughter Mary or Jennifer, you've given her a nice name, but not a distinctive one. Call her Robin and she's got a memorable name—Robin Banks (Oakley, Utah; Detroit, Michigan; Fairview, Illinois; New Orleans, Louisiana; North Tonawand, New York).

A memorable name is valuable throughout life. For instance, who would hesitate to buy a used car from Frank Earnest (Rienzi, Mississippi; Alloway, New Jersey; Carlisle, Pennsylvania; Norfolk, Virginia)? No one called Clark Barr (Dayton, Ohio) is ever likely to be referred to as What's-his-name.

Imagine a salesman with a really memorable name making a cold call on a company president. "There's a man here to see you but he doesn't have an appointment," the receptionist tells the president. "His name is Frank N. Stein."

"Send him right up!"

Frank N. Stein (Miami, Florida; Rockville, Maryland; San Diego, California; Norman, Oklahoma) is a name that gets attention and arouses curiosity.

Once I got going, I found my search was limited mostly by my imagination. Three gratifying finds were Georgia Peach (Skaneateles, New York), M. T. Head (Birmingham, Alabama; Durham, North Carolina) and Minnie Vann (Jackson, Tennessee). There were many, many listings for Pearl Harper. Everyone remembers Pearl Harper.

Some family names almost beg for a distinctive given name. Day is one of them. There are several women listed as Sunny Day (Louisville, Kentucky; Ponte Vedra Beach, Florida; Orem, Utah), one as Happy Day (Graysville, Pennsylvania) and two as Summer Day (Derby, New York; Anderson, South Carolina). There are dozens of June Days but not many May Days, possibly because most parents don't want their daughters sounding as though they are calling for help whenever they identify themselves.

Men's names aren't as easy to make memorable as women's, but some guys make a good showing anyway. A little work on my computer keyboard turned up Phil Harmonic (New York City), Lance Boyle (Bath, New Hampshire) and King Fisher (Miami, Florida). I found one Al Dente (Westminster, California). There is Albert Fresco (Manhasset, New York; Chadds Ford, Pennsylvania) and Albert Dente (Medford, Massachusetts; Commack, New York). Very likely their friends call them Al. James Dandy (Phoenix, Arizona; Philadelphia, Pennsylvania; Hodges, South Carolina) must be Jim to everyone. Famous show business teams can end up as memorable names: Laurel Hardy (Irvine, Kentucky; Flushing, New York) and Stephen Eady (Chattanooga, Tennessee; Alexander City, Alabama).

The parents of Nosmo King (Sanibel, Florida; Des Plaines, Illinois) could promise their children that their names would be everywhere. But despite its frequency on the street, I couldn't find a Nopar King anywhere.

Some names are only distinctive in telephone directories or other alphabetical listings where the last name appears first. For example, Cracker, Jack (Wilkes Barre, Pennsylvania), Dollar, Bill (Lakeland, Florida; Eclectic, Alabama; Amarillo, Texas; Aurora, Illinois), Wise, Guy (Warren, Maine; Middletown, Pennsylvania; Marianna, Florida).

I found Sweet, Lorraine (Whitakers, North Carolina; Woodbridge, Virginia; Tampa, Florida; Marion, Iowa) and Sweet, Sue (Holly Springs, Georgia; Boonton, New Jersey; Clarks, Nebraska). In Lake Providence, Louisiana, there is a Sweet, Georgia B., and I am sure the B. stands for Brown. Dozens of women are named West, Virginia, but there's only one North, Carolina (West Palm Beach, Florida). My favorite name in reverse order is Oopsy, Daisy (Providence, Rhode Island).

Then there are the palindromic names. If your name is Mark Kram (Los Angeles, California; Saint Louis, Missouri) or Marc Cram (Hobart, Indiana), it's the same in either direction.

All these memorable names left me with the feeling that my own is quite forgettable. If only my parents had named me Sword, my phone book listing might have really given me an edge.

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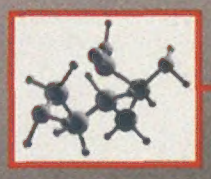

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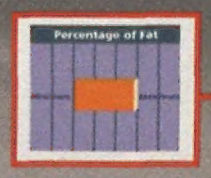

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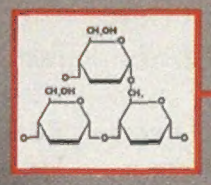

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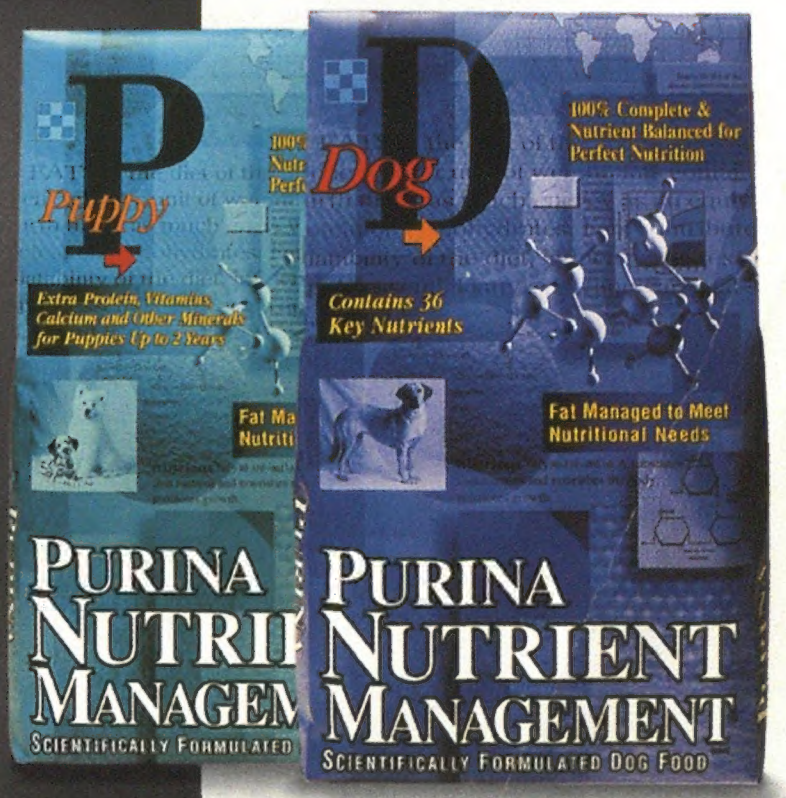
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